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NAVSHIPS 92121(A)

INSTRUCTION BOOK

for

RADIO TRANSMITTING SETS

**AN/SRT-14, AN/SRT-14A, AN/SRT-15,
AN/SRT-15A, AN/SRT-16 AND AN/SRT-16A**

FEDERAL TELEPHONE AND RADIO COMPANY

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To: All Activities Concerned with the
Installation, Operation and Main-
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Subj: Instruction Book for Radio Trans-
mitting Sets AN/SRT-14, AN/SRT-14A,
AN/SRT-15, AN/SRT-15A, AN/SRT-16
and AN/SRT-16A

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A. G. MUMMA
Chief of Bureau

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SAFETY NOTICE

The attention of officers and operating personnel is directed to Chapter 67 of the *Bureau of Ships Manual* or superseding instructions on the subject of radio-safety precautions to be observed.

This equipment employs voltages which are dangerous and may be fatal if contacted by operating personnel. Extreme caution should be exercised when working with the equipment.

While every practicable safety precaution has been incorporated in this equipment, the following rules must be strictly observed:

KEEP AWAY FROM LIVE CIRCUITS:

Operating personnel must at all times observe all safety regulations. Do not change tubes or make adjustments inside equipment with high voltage supply on. Under certain conditions dangerous potentials may exist in circuits with power controls in the off position due to charges retained by capacitors. To avoid casualties always remove power and discharge and ground circuits prior to touching them.

DON'T SERVICE OR ADJUST ALONE:

Under no circumstances should any person reach within or enter the enclosure for the purpose of servicing or adjusting the equipment without the immediate presence or assistance of another person capable of rendering aid.

DON'T TAMPER WITH INTERLOCKS:

Do not depend upon door switches or interlocks for protection but always shut down motor generators or other power equipment. Under no circumstances should any access gate, door, or safety interlock switch be removed, short-circuited, or tampered with in any way, by other than authorized maintenance personnel, nor should reliance be placed upon the interlock switches for removing voltages from the equipment.

WHERE 1000 VOLTS OR MORE, TAKE NOTE:

NEVER MEASURE POTENTIAL IN EXCESS OF 1000 VOLTS BY MEANS OF FLEXIBLE TEST LEADS, OR PROBES.

RESUSCITATION

AN APPROVED POSTER ILLUSTRATING THE RULES FOR RESUSCITATION BY THE PRONE PRESSURE METHOD SHALL BE PROMINENTLY DISPLAYED IN EACH RADIO, RADAR, OR SONAR ENCLOSURE. POSTERS MAY BE OBTAINED UPON REQUEST TO THE BUREAU OF MEDICINE AND SURGERY.

NAVSHIPS 92121(A)

INSTRUCTION BOOK

for

RADIO TRANSMITTING SETS

AN/SRT-14, AN/SRT-14A, AN/SRT-15,
AN/SRT-15A, AN/SRT-16 AND AN/SRT-16A

SECTION 1

GENERAL DESCRIPTION

FEDERAL TELEPHONE AND RADIO COMPANY

A division of INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

CLIFTON, NEW JERSEY

DEPARTMENT OF THE NAVY

BUREAU OF SHIPS

Contract: NObsr-52021
NObsr-52622

Approved by BuShips: 26 October 1955

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SECTION 1 GENERAL DESCRIPTION

1. INTRODUCTION.

This instruction book describes the procedure for the installation, operation, and maintenance of Radio Transmitting Sets AN/SRT-14, AN/SRT-15 and AN/SRT-16. Primary attention is given to the installation, operation, and maintenance of these sets on shipboard. Other locations should consider the information, particularly that on installation, in the light of their individual conditions or requirements.

Note

The AN/SRT-14A, 15A and 16A are non-magnetic versions of the AN/SRT-14, 15 and 16 respectively. As the nonmagnetic versions vary from the standard types only in the material used for cabinet panels, all other information on the general description of the AN/SRT-14, 15 and 16, as set forth in the following section, applies equally as well for the AN/SRT-14A, 15A and 16A.

Note

Where, throughout this section, reference is made to either low level radio modulator or high level radio modulator, it should not be interpreted as meaning the technique of modulation known as grid modulation or low level modulation, but rather as referring to the operating power level.

2. BASIC FEATURES.

a. PURPOSE.—The purpose of Radio Transmitting Sets AN/SRT-14, 15 and 16 is to provide radio-frequency energy at any frequency from 0.3 to 26 mc for the transmission of voice, facsimile, and also c-w telegraph communication. All three sets are capable of covering the frequency range in steps of 10 cycles with nominal 100-watt output level. The AN/SRT-15 and AN/SRT-16 sets can also operate at a nominal 500-watt carrier level in the frequency range 2 to 26 mc.

b. MODES OF TRANSMISSION.—The AN/SRT-14 and AN/SRT-15 sets are single transmitters. The AN/SRT-14 is limited to a single 100-watt output while the AN/SRT-15 may transmit an r-f carrier at either a 100-watt or a 500-watt nominal level. The AN/SRT-16 set is a dual transmitter capable of transmitting two carriers simultaneously, one of which is limited to a 100-watt output while the other may be transmitted at the 500-watt level or at the 100-watt level. Although the carrier levels are referred to as 100 and 500 watts, the outputs vary over the frequency range according to the form of communication. Each r-f carrier may be used for any one of several forms of communication:

| | | | | | | | |
|----------------------------|---|--|----------------------------|-------------------|-------------|-----------------------|----------------|
| Facsimile | — | amplitude modulation (A3) | | | | | |
| Telegraphy | — | <table> <tr> <td>amplitude modulation (A1)—</td> </tr> <tr> <td>c-w hand key, c-w</td> </tr> <tr> <td>machine key</td> </tr> <tr> <td>frequency shift (F1)—</td> </tr> <tr> <td>FS machine key</td> </tr> </table> | amplitude modulation (A1)— | c-w hand key, c-w | machine key | frequency shift (F1)— | FS machine key |
| amplitude modulation (A1)— | | | | | | | |
| c-w hand key, c-w | | | | | | | |
| machine key | | | | | | | |
| frequency shift (F1)— | | | | | | | |
| FS machine key | | | | | | | |
| Radiophone | — | frequency modulation (F4) | | | | | |

Over the entire frequency range, the unmodulated carrier level for radiophone communication may vary from 55 to 100 watts at the lower level and from 265 to 400 watts at the higher level, while over the same frequency range the carrier level for telegraph and facsimile transmission may vary from 80 to 150 watts for the lower output level and from 400 to 600 watts at the higher level.

c. FREQUENCY SELECTION.—Frequency selection is manually accomplished in the AN/SRT-14, 15 and 16. A set of nine frequency selection control knobs, located on the radio frequency oscillator, allow an operator to choose, in 10-cps steps, any frequency between 0.3-26 mc.

d. TUNING PROCEDURES.—The AN/SRT-14, 15 and 16 are manually tuned to any desired frequency within the 0.3-26-mc range. Tuning is accomplished in three stages in the radio-frequency amplifier unit. Meters are provided to assist in the tuning operation. The antenna tuning equipment also contains several stages of manual tuning, with the controls and indicators located in the transmitter.

e. REMOTE OPERATION.—Each of the transmitting sets may be arranged for remote operation. Start-stop control, keying, and radiophone may be performed from a remote location. Standard Navy six-wire radio transmitter control circuits are used for all remote control operations.

f. PRIMARY POWER SUPPLY.—For 100-watt operation, only 110-volt, single-phase, 60-cps power is required. For 500-watt operation an additional source of 220- or 440-volt, three-phase, 60-cps power is required.

3. DESCRIPTION OF SETS.

a. GENERAL.—Radio Transmitting Sets AN/SRT-14, AN/SRT-15 and AN/SRT-16 are formed from a number of major components that are used like building blocks to assemble a set with desired features. Although the necessary differences exist in the interconnecting wiring of the transmitters, the major components forming each set are identical and interchangeable. Figures 1-1, 1-2, and 1-3 show the major components of the sets.

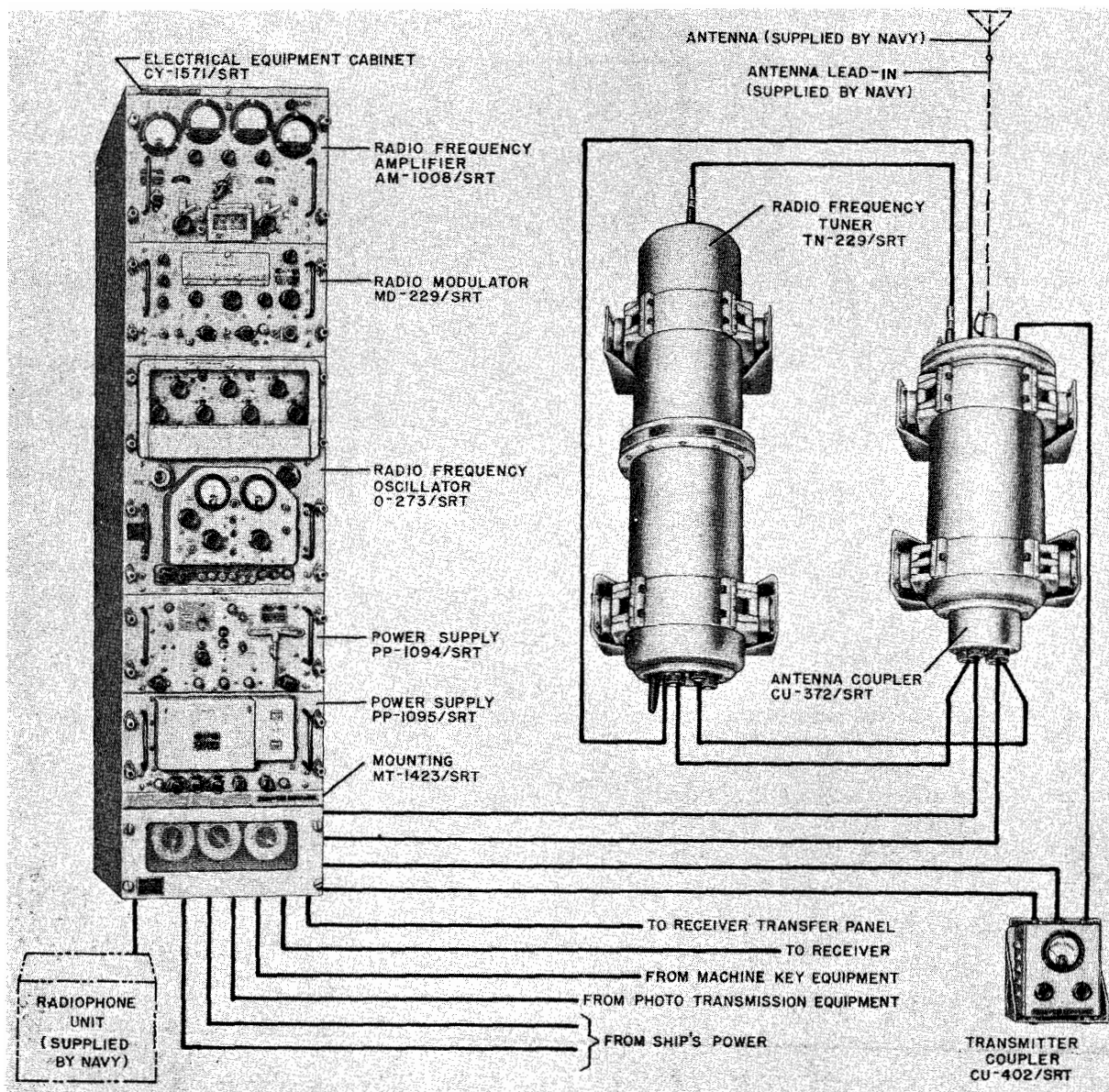


Figure 1-1. Radio Transmitting Set AN/SRT-14, Relationship of Units

b. AN/SRT-14. (See figure 1-1.)—Radio Transmitting Set AN/SRT-14 consists of a 100-watt transmitter bay, antenna tuning equipment, together with spare parts. A radiophone unit and an antenna are required but are not furnished as parts of the set.

c. AN/SRT-15. (See figure 1-2.)—Radio Transmitting Set AN/SRT-15 consists of a 100-watt transmitter bay and booster, antenna tuning equipment, together with spare parts. A radiophone unit and an antenna are required but are not furnished as parts of the set.

d. AN/SRT-16. (See figure 1-3.)—Radio Transmitting Set AN/SRT-16 consists of two 100-watt transmitter bays and two antenna tuning equipments, together

with spare parts. Two radiophone units and two antennas are required but are not furnished as parts of the set.

e. TRANSMITTER BAY.—Each AN/SRT-14, 15 and 16 set has a basic transmitter bay having identical and interchangeable units to accomplish 100-watt operation. The AN/SRT-15 and AN/SRT-16 transmitter bays have, in addition, identical and interchangeable modulator power units to accomplish 500-watt operation. The AN/SRT-14 transmitter bay consists of a transmitter group, a transmitter coupler, and a mounting (figure 1-1). The AN/SRT-15 transmitter bay consists of a transmitter group, a transmitter coupler,

two mountings, and a radio modulator-power supply (booster) (figure 1-2). The AN/SRT-16 transmitter bay is made up of two transmitter groups, two transmitter couplers, two mountings, and a radio modulator-power supply (booster) (figure 1-3).

TABLE 1-1. MAJOR UNITS

| NAME OF UNIT | AN/SRT-14 | AN/SRT-15 | AN/SRT-16 |
|---|----------------|----------------|----------------|
| Transmitter Group OA-684/SRT | 1 | 1 | 2 |
| Radio Modulator-Power Supply OA-685/SRT (Booster) | 0 | 1 | 1 |
| Mounting MT-1423/SRT | 1 | 2 | 2 |
| Antenna Coupler CU-372/SRT | 1 | 1 | 2 |
| Radio Frequency Tuner TN-229/SRT | 1 | 1 | 2 |
| Test Cable ¹ | 1 | 1 | 1 |
| Installation Material (including Cover CW-341/SRT in AN/SRT-15) | 1 ² | 1 ² | 1 ² |
| Spare Parts | 1 ² | 1 ² | 1 ² |
| Radiophone Unit, Navy Type 23500 ³ | 1 | 1 | 2 |
| Antenna (as required) ³ | 1 | 1 | 2 |

- ¹ Material (less wires) supplied loose.
- ² Items supplied vary with type of set.
- ³ Supplied by Navy.

f. ANTENNA TUNING EQUIPMENT.—The term "antenna tuning equipment" covers the Antenna Coupler CU-372/SRT and the Radio Frequency Tuner TN-229/SRT. One of each of these units is required for an AN/SRT-14 or 15, while two are required for an AN/SRT-16.

g. COMPARISON OF SETS.—Table 1-1 shows, for each transmitter set, the major units included, their nomenclature, and the quantity supplied.

4. DESCRIPTION OF UNITS.

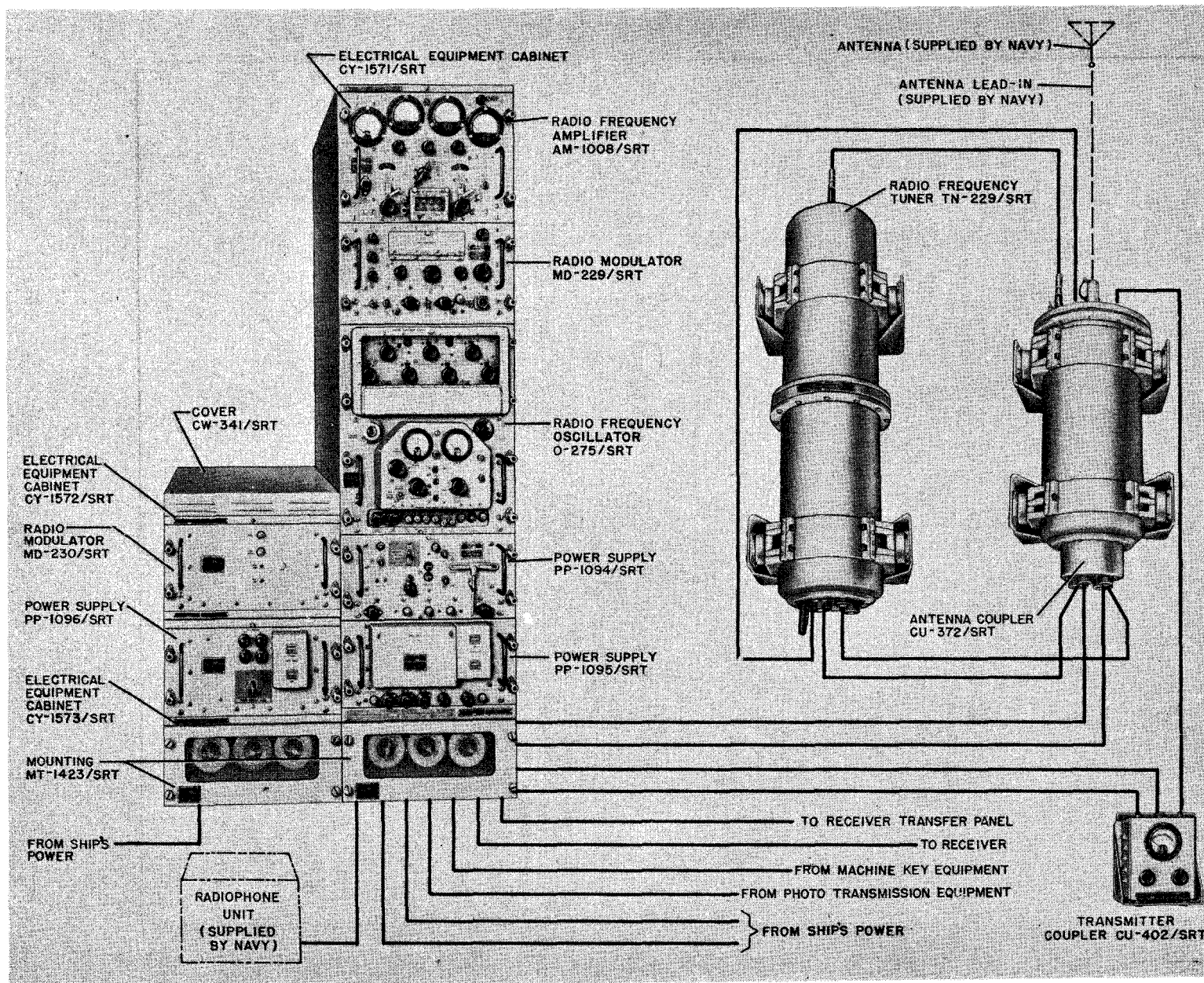
a. NOMENCLATURE.—Table 1-2 shows the official nomenclature, common name, abbreviation, and reference symbol group for every major component in the AN/SRT-14, 15 and 16.

b. TRANSMITTER GROUP OA-684/SRT.—The 100-watt transmitter group contains all circuits for generating the desired radio frequency, amplifying it to the 100-watt carrier level, and provides it either in amplitude- or frequency-modulation communication. Modulated r-f carrier output is delivered to a 50-ohm coaxial cable terminated in an "N" connector. The r-f carrier is then connected to an adjustable impedance transformer for matching to the output impedance of the antenna tuning system. All necessary power supplies are included to convert the primary power to the voltages

TABLE 1-2. GENERAL NOMENCLATURE

| OFFICIAL NOMENCLATURE | COMMON NAME | ABBREVIATION | REFERENCE SYMBOL GROUP |
|---|------------------------------------|--------------|---|
| Transmitter Group OA-684/SRT ¹ | Transmitter Group | | 501-699, 1001-1399, 2001-3099, 3201-3299 |
| Electrical Equipment Cabinet CY-1571/SRT ¹ | Transmitter Group Cabinet | | 601-699 |
| Radio Frequency Amplifier AM-1008/SRT | Radio Frequency Amplifier | RFA | 1301-1399 |
| Radio Modulator MD-229/SRT | Low Level Radio Modulator | LLRM | 1001-1299 |
| Radio Frequency Oscillator O-275/SRT | Radio Frequency Oscillator | RFO | 2001-2999 |
| Power Supply PP-1094/SRT | Low Voltage Power Supply | LVPS | 3001-3099 |
| Power Supply PP-1095/SRT | Medium Voltage Power Supply | MVPS | 501-599 |
| Transmitter Coupler CU-402/SRT | Load Adjusting Unit | LAU | 3201-3299 |
| Radio Modulator-Power Supply OA-685/SRT ¹ | Booster | | 1401-1699 |
| Electrical Equipment Cabinet CY-1572/SRT ¹ | High Level Radio Modulator Cabinet | HLRM Cabinet | 1401-1499 |
| Electrical Equipment Cabinet CY-1573/SRT ¹ | High Voltage Power Supply Cabinet | HVPS Cabinet | 1401-1499 |
| Radio Modulator MD-230/SRT | High Level Radio Modulator | HLRM | 1601-1699 |
| Power Supply PP-1096/SRT | High Voltage Power Supply | HVPS | 1501-1599 |
| Cover ¹ CW-341/SRT ² | Booster Cover | | — |
| Mounting MT-1423/SRT | Mounting | | 701-799 |
| Antenna Coupler CU-372/SRT | Antenna Coupler | | 3501-3599 |
| Radio Frequency Tuner TN-229/SRT | R-F Tuner | | 301-399 |
| Control-Indicator C-1352/SRT | Control-Indicator | | 401-499 |
| Installation Kit MK-230/SRT-14 | Installation Material, AN/SRT-14 | | 3301-3399 |
| Installation Kit MK-231/SRT-14A | Installation Material, AN/SRT-14A | | 3301-3399 |
| Installation Kit MK-232/SRT-15 | Installation Material, AN/SRT-15 | | 3301-3399 |
| Installation Kit MK-233/SRT-15A | Installation Material, AN/SRT-15A | | 3301-3399 |
| Installation Kit MK-234/SRT-16 | Installation Material, AN/SRT-16 | | 3301-3399 |
| Installation Kit MK-235/SRT-16A | Installation Material, AN/SRT-16A | | 3301-3399 |

- ¹ Indicates available in nonmagnetic version with nomenclature modified to show suffix "A"—e.g., OA-684A/SRT and CY-1572A/SRT for nonmagnetic versions.
- ² Cover CW-341/SRT part of Installation Kit MK-232/SRT-15 (CW-341A/SRT part of MK-233/SRT-15A).



NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A

GENERAL
DESCRIPTION

Figure 1-2. Radio Transmitting Set AN/SRT-15, Relationship of Units

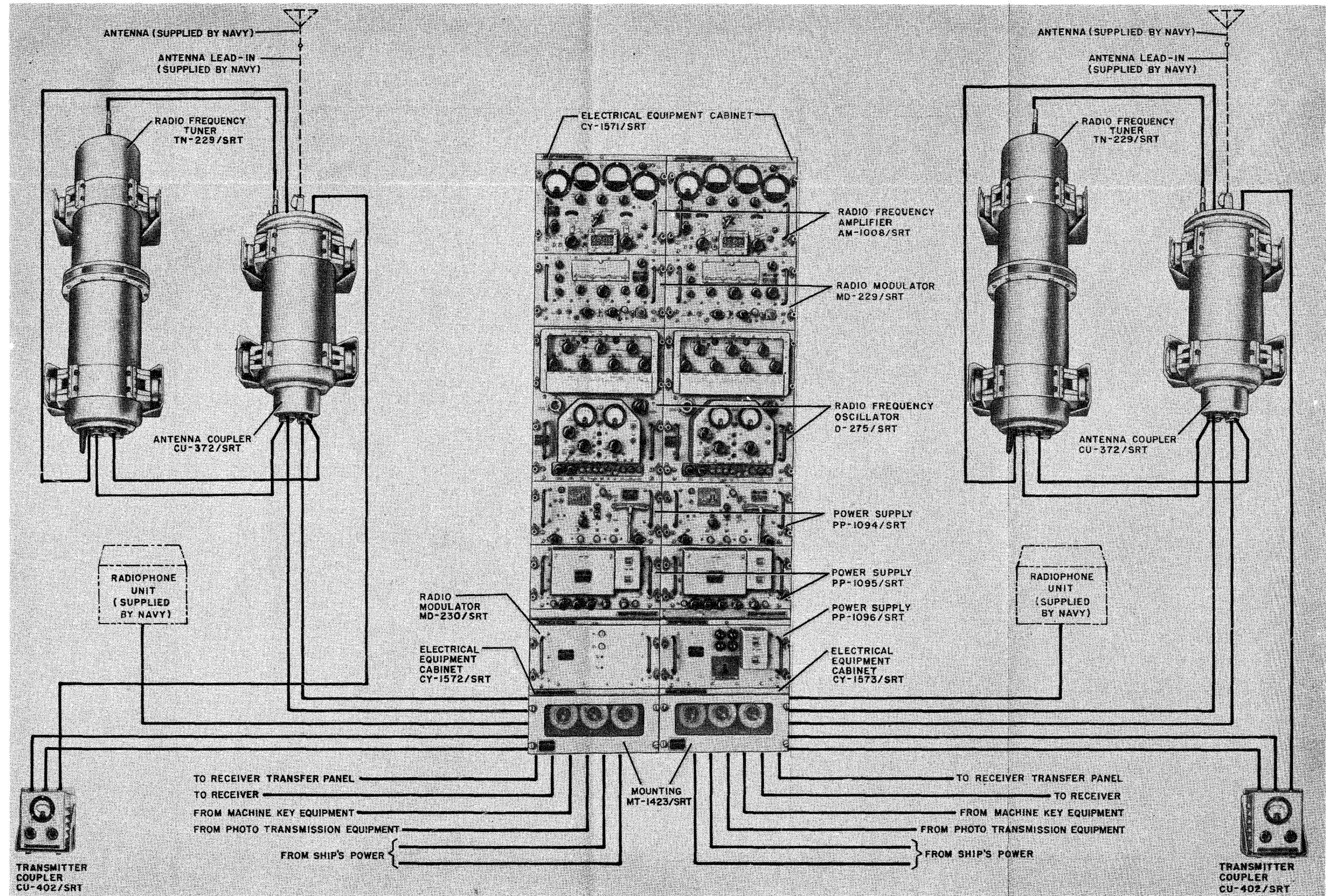


Figure 1-3. Radio Transmitting Set AN/SRT-16, Relationship of Units

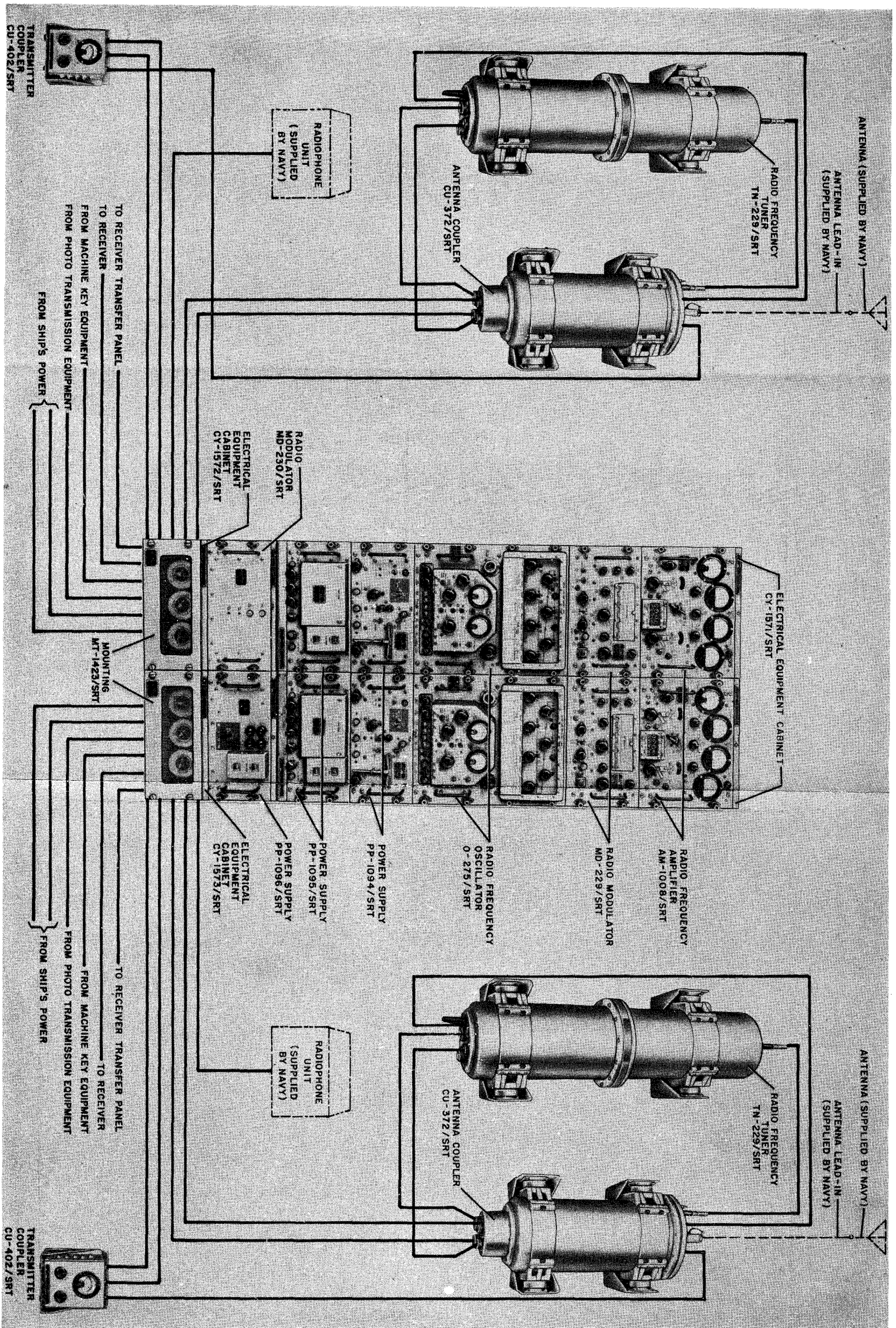


Figure 1-3. Radio Transmitting Set AN/SRT-16, Relationship of Units

required in the various circuits. However, the transmitter group must be associated with Mounting MT-1423/SRT so that the necessary forced-air ventilation and suitable mounting arrangements may be obtained.

The transmitter group consists of Electrical Equipment Cabinet CY-1571/SRT holding five pull-out drawer-type chassis and the Transmitter Coupler CU-402/SRT, commonly known as load adjusting unit, which contains the impedance matching transformer and the standing-wave monitor.

From top to bottom the major components located in Electrical Equipment Cabinet CY-1571/SRT are:

- (1) Radio Frequency Amplifier AM-1008/SRT (Radio Frequency Amplifier, RFA)
- (2) Radio Modulator MD-229/SRT (Low Level Radio Modulator, LLRM)
- (3) Radio Frequency Oscillator O-275/SRT (Radio Frequency Oscillator, RFO)
- (4) Power Supply PP-1094/SRT (Low Voltage Power Supply, LVPS)
- (5) Power Supply PP-1095/SRT (Medium Voltage Power Supply, MVPS)

For power, control, and r-f circuit connections, each drawer is equipped with connectors at the rear that mate with receptacles in the cabinet wiring. The front panel of each drawer is equipped with hex socket-head captive screws that secure the drawer to the cabinet. Releasing these screws with the hex key (provided on the front panel of the low voltage power supply) permits the drawers to be withdrawn on a slide and rail arrangement all the way out of the cabinet. At this point the drawer slides engage a positive stop that must be released (by removing two retaining screws and depressing two slide latches) before complete withdrawal of the drawer can be accomplished. The retractable cabinet wiring is disconnected from the drawer at this point and the retractable cable is latched in its extended position to a special latch provided for this purpose for each drawer. Two handles are provided on the front of each drawer for convenience in handling. To reinsert a drawer, the slides are engaged with the cabinet rails, and the cabinet wiring is reconnected; then, with the slide latches depressed, the drawer is run in until the slides hit the spring-loaded buttons. Depressing these buttons allows the drawer to be completely returned into the cabinet.

While maximum side and rear access is convenient during installation, it is not essential for maintenance of this equipment. Since the drawers are removable, only sufficient access space is required to permit removal of the individual drawers. Preparation of the special test cable allows operation of individual drawers when completely removed from the cabinet.

(1) RADIO FREQUENCY AMPLIFIER AM-1008/SRT (RADIO FREQUENCY AMPLIFIER, RFA). (See figure 1-4.)—The basic function of the radio fre-

quency amplifier (RFA) is to amplify the r-f signal received from the radio frequency oscillator to either the 100-watt or 500-watt nominal level.

The RFA consists of three stages of amplification: namely, the buffer, intermediate power amplifier (IPA), and power amplifier (PA). The output of the radio frequency oscillator drives the tuned buffer stage. This stage also receives keying signals from the low level radio modulator to key the output of the RFA on and off during hand-key, machine-key, and phone operation. The tuned intermediate power amplifier stage follows using a 5933 beam tetrode. The final stage is the power amplifier employing a 4-400A tetrode with forced air cooling. In phone operation an audio modulating signal is received from either the low level radio modulator or the high level radio modulator, the latter in an AN/SRT-15 or 16 only, to amplitude-modulate the output of the RFA.

The RFA is manually tuned by the adjusting of three front panel controls. Each of these stages of amplification has a tuned plate tank circuit. The first of the tuning controls is a six-position switch that connects a tank circuit to each of the three stages, in accordance with the band of frequencies in which the selected transmission frequency lies. The second control tunes the buffer and IPA stage tank circuits and the third control tunes the PA stage.

In addition to the tuning controls, there is a control for regulating the input level of the signal from the radio frequency oscillator. The RFA front panel contains four meters used for tuning indicators and as test meters for various operating voltages and currents. A set of indicator lamps is provided to indicate overload conditions and operating conditions of the carrier. For test purposes, the front panel also contains a receptacle and switch, which allows an external source of r-f energy other than the component radio frequency oscillator to energize the buffer stage. A push-button switch, which is used to place a transmitter group in the nominal 550-

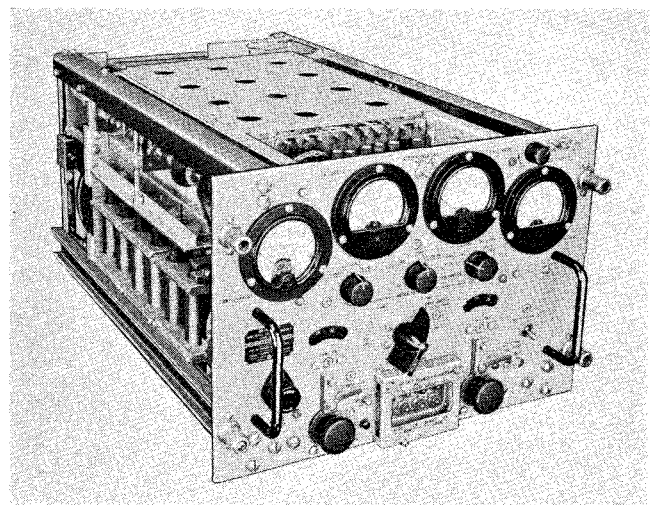


Figure 1-4. Radio Frequency Amplifier AM-1008/SRT, Front Oblique View

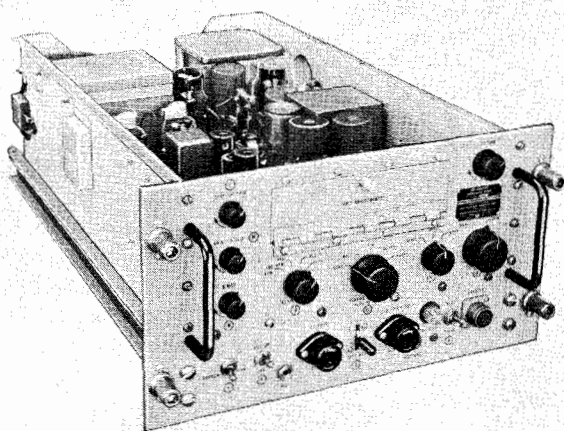


Figure 1-5. Radio Modulator MD-229/SRT, Front Oblique View

watt level of output (in SRT-15 and 16 only), is mounted on the RFA front panel. A second push button is used to restore a transmitter group to the 100-watt level.

(2) RADIO MODULATOR MD-229/SRT (LOW LEVEL RADIO MODULATOR, LLRM). (See figure 1-5.)—This unit is commonly called the low level radio modulator (LLRM) to distinguish it from the high level radio modulator that is used in AN/SRT-15 and AN/SRT-16 sets. The low level radio modulator accepts voice, telegraphy (hand or machine key), or facsimile signals. It contains audio amplifying and modulating circuits for amplitude modulation of the r-f carrier at the 100-watt level. For 500-watt carrier operation in the AN/SRT-15 and 16, the low level radio modulator feeds a high level radio modulator that boosts the audio signal to the required level. Peak limiting and noise suppression (squench) features are provided in the audio circuits. Either carbon or dynamic microphones may be used.

An electronic keyer circuit provides the keying voltage to control the radio frequency amplifier during amplitude modulation (cw) telegraphy and the radio frequency oscillator in frequency-shift telegraphy. A wave-shaping circuit provides optimum keying waveshape for the keying speed in use. The keying circuits are suitable for speeds from hand keying to 600 words per minute. Facsimile set signals are connected through the low level radio modulator to the frequency-shift circuits in the radio frequency oscillator drawer. A 200-cps oscillator is included to phase shift modulate the transmitter signal to overcome selective fading in frequency-shift transmission; in c-w telegraphy the audio oscillator has a 1,000-cps output used for aural monitoring of the keying signals. A regulated +250-volt power supply and a -12-volt power supply are provided to supply the requirements of the low level radio modulator and other circuits of the transmitter group.

The front panel of the low level radio modulator has controls for selecting a mode of transmission, receptacles for a local carbon or dynamic microphone, gain controls, and a squelch circuit control. A test key is provided for carrier control.

(3) RADIO FREQUENCY OSCILLATOR O-275/SRT (RADIO FREQUENCY OSCILLATOR, RFO). (See figures 1-6 and 1-7.)—The radio frequency oscillator (RFO) is the source of the r-f carrier signal. The 100-kc crystal oscillator, the interpolation oscillator, multipliers, frequency converters, and filters provide frequencies between 0.3 and 26 mc in steps of 10 cycles. A frequency-shift oscillator provides carrier frequency shift for telegraphy in accordance with keying signals received from the low level radio modulator. The radio frequency oscillator delivers a minimum output of two volts rms to the first stage of the radio frequency amplifier.

The radio frequency oscillator consists of 15 sections: 14 easily removable units holding vacuum tube circuits, and a mounting to which these units are attached. The 15 sections have official standard item name and symbol designations but are usually referred to by their common name or unit number. The output stage of the radio frequency oscillator is divided into three separate units (11a, 11b, 11c), each of which covers a portion of the total frequency range of the radio transmitter. Table 1-3 gives the official standard item name, reference symbol, common name, subunit number, and reference symbol for RFO units.

Units 1 through 12 are equipped with multiple pin-type connectors that mate with receptacles on unit 14. Radio-frequency connections are made through BNC connectors and jumper cables. On each subchassis, test

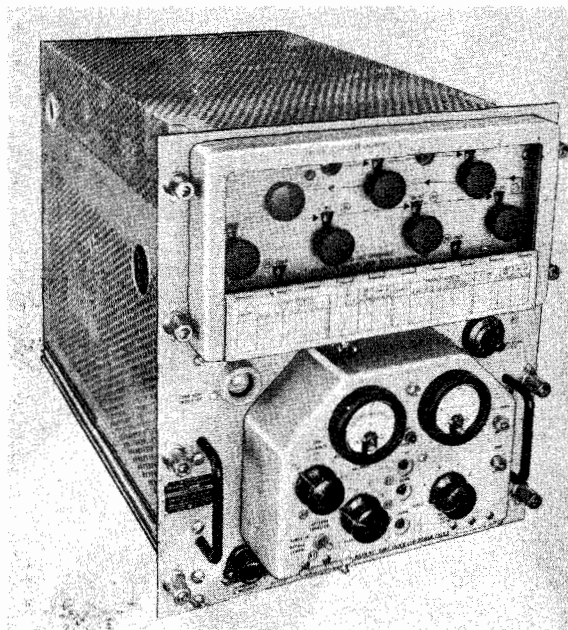


Figure 1-6. Radio Frequency Oscillator O-275/SRT, Front Oblique View, Covers On

TABLE 1-3. SUBUNITS OF RADIO FREQUENCY OSCILLATOR O-275/SRT

| STANDARD ITEM NAME | REF SYMBOL | COMMON NAME | SUBUNIT | SYMBOL GROUP |
|--------------------------------|------------|----------------------------|----------|--------------|
| Radio Frequency Oscillator | Z-2001 | Crystal Oscillator | Unit 1 | 2001-2030 |
| Frequency Multiplier | Z-2034 | Frequency Multiplier | Unit 2 | 2031-2050 |
| Radio Frequency Oscillator | Z-2053 | Interpolation Oscillator | Unit 3 | 2051-2099 |
| Frequency Multiplier | Z-2103 | Frequency Multiplier | Unit 4 | 2101-2125 |
| Electronic Frequency Converter | Z-2158 | Frequency Converter | Unit 5 | 2151-2199 |
| Electronic Frequency Converter | Z-2204 | 10 Kc Step Generator | Unit 6 | 2201-2299 |
| Frequency Multiplier | Z-2305 | Frequency Multiplier | Unit 7 | 2301-2325 |
| Electronic Frequency Converter | Z-2330 | 100 Kc Step Generator | Unit 8 | 2336-2425 |
| Electronic Frequency Converter | Z-2426 | Frequency Converter | Unit 9 | 2426-2525 |
| Frequency Multiplier | Z-2526 | 1 Mc Step Generator | Unit 10 | 2526-2600 |
| Electronic Frequency Converter | Z-2626 | Frequency Converter | Unit 11A | 2626-2650 |
| Electronic Frequency Converter | Z-2651 | Frequency Converter | Unit 11B | 2651-2800 |
| Electronic Frequency Converter | Z-2801 | Frequency Converter | Unit 11C | 2801-2915 |
| Radio Frequency Oscillator | Z-2127 | Frequency Shift Oscillator | Unit 12 | 2126-2150 |
| Electrical Equipment Rack | Z-2901 | Mounting | Unit 14 | 2001-2999 |

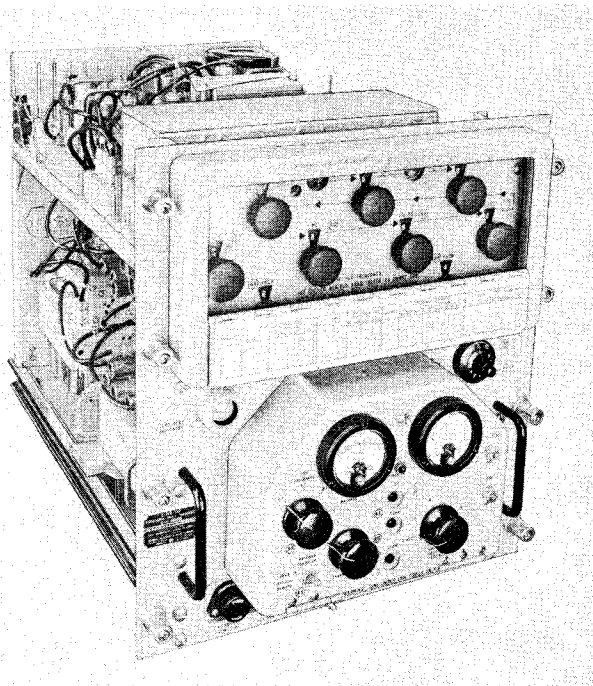


Figure 1-7. Radio Frequency Oscillator O-275/SRT, Front Oblique View, Covers Off

points are provided at radio-frequency input or output points. Each subchassis is fastened to the frame with quick-acting fasteners. Locating pins are provided to insure precise positioning and to minimize the probability of damage to electrical and mechanical connections. The separable construction is a great convenience in maintenance operations. By using a test cable, any subunit can be examined in detail, with each part readily accessible. The front panel may be detached by removing several machine screws. All the units in the RFO are shielded.

There are three individual oscillators in the radio frequency oscillator. Unit 1 is the crystal oscillator. It generates the basic frequency of 100 kc with an accuracy

of 1.5 parts per million over the temperature range $-20^{\circ}\text{C.} (-4^{\circ}\text{F.}) +50^{\circ}\text{C.} (+122^{\circ}\text{F.})$. Unit 3 is the interpolation oscillator used to obtain the 10-cps steps. The accuracy of this oscillator is ± 20 cycles over the temperature range of $-20^{\circ}\text{C.} (-4^{\circ}\text{F.})$ to $+50^{\circ}\text{C.} (+122^{\circ}\text{F.})$. Unit 12 is the frequency-shift oscillator. The 100-kc carrier frequency of this oscillator is capable of being shifted from $+2,000$ cycles to -500 cycles about the 100-kc value within 5 percent linearity. The frequency shift oscillator is used in the mixing sequence only when SERVICE SELECTOR control (U) on the low level radio modulator is set in one of the frequency-shift positions (FSK or FAX).

The 100-kc signal from the crystal oscillator controls several frequency multipliers that generate a high order of frequencies for the mixing stages. Locked to the crystal oscillator are 10-kc, 100-kc, and 1-mc step generators, each of which provides 10 frequency increments used in the mixing sequence. The independent interpolation oscillator is used to obtain 10-, 100-, and 1,000-cps steps. This interpolation oscillator can be checked readily against the crystal oscillator and may be adjusted to maintain its accuracy. Several frequency converters mix the signals from the crystal oscillator, interpolation oscillator, and the several step generators to provide an r-f signal in steps of 10 cycles over the frequency range 0.3 to 26 mc.

The front panel of the radio frequency oscillator has all the controls for setting up any frequency within the frequency range. Nine knobs are provided for manually setting a frequency.

An electron ray tube is provided for checking the frequency-shift oscillator or the interpolation oscillator against the standard crystal oscillator. A set of test receptacles are provided on the front panel; these bring out important signals in the RFO for monitoring with a standard test oscilloscope.

Mounted to the face of the radio frequency oscillator front panel and considered as a component of the Radio Frequency Oscillator O-275/SRT is the Control-Indica-

tor C-1352/SRT. This unit has all the controls and indicators required to accomplish the manual tuning of the two antenna tuning equipment components (antenna coupler and r-f tuner). A set of three push-button switches control the up and down movement of the shorting ring on the main tuning coil in the r-f tuner. One toggle switch is used to control the action of the bypass switch in the antenna coupler, enabling the antenna tuning equipment to be placed in the antenna line or be completely bypassed. One rotary switch controls the loading switches in the antenna coupler, selecting various values of capacitive or inductive reactance loading in conjunction with the main tuning coil. Another rotary switch controls the action of a switch in the r-f tuner, which switches an impedance transformer in or out of the transmission line. An indicator is provided to show the standing-wave ratio on the transmission line. This indicator has an associated switch which is used to set the range of the indicator. A second indicator shows the position of the shorting ring on the main tuning coil in the r-f tuner.

(4) POWER SUPPLY PP-1094/SRT (LOW VOLTAGE POWER SUPPLY, LVPS). (See figure 1-8.)—This unit is commonly called the low voltage power supply (LVPS) to distinguish it from other power supplies.

It consists of three conventional full-wave high-vacuum rectifiers and filter circuits providing +300 volts, +250 volts, and -220 volts for the transmitter group circuits. A full-wave metallic rectifier provides a separate -24-volt supply for control circuit functions. One plate-filament transformer supplies all voltages for the rectifier circuits. Primary a-c input is 110 volts, 60 cps, single phase.

The two controls for turning power on and off in the 100-watt transmitter group are found on the front panel of this unit. A CABINET HEATER switch controls heaters provided to raise the equipment temperature under some conditions. The STANDBY-OPERATE switch may be used to put the equipment in a "ready"

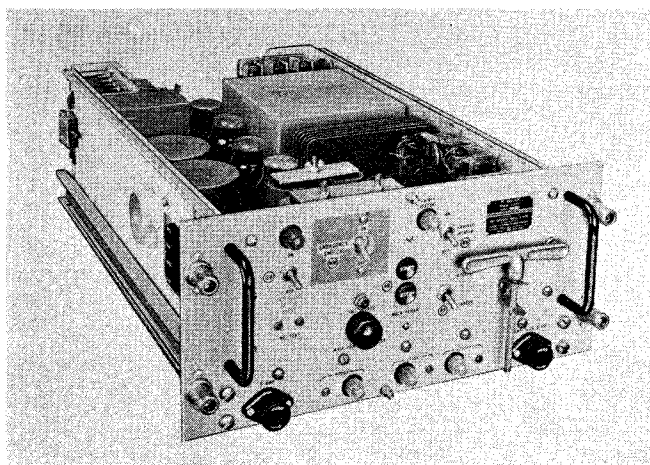


Figure 1-8. Power Supply PP-1094/SRT,
Front Oblique View

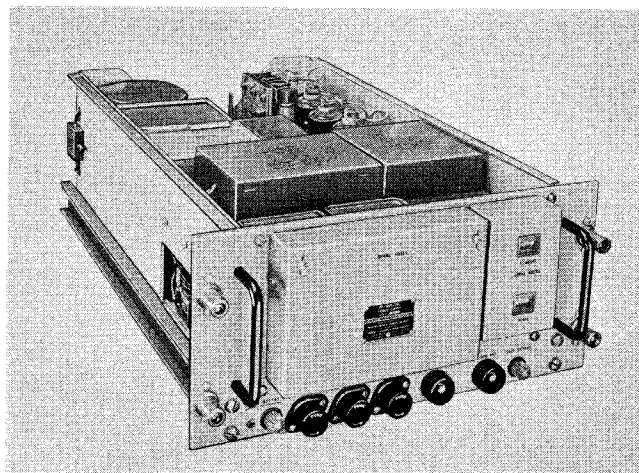


Figure 1-9. Power Supply PP-1095/SRT,
Front Oblique View

or "stand-by" condition. The front panel indicator lights show the proper operation of controls and circuits of this unit.

(5) POWER SUPPLY PP-1095/SRT (MEDIUM VOLTAGE POWER SUPPLY, MVPS). (See figure 1-9.)—This unit is commonly called the medium voltage power supply (MVPS) to distinguish it from other power supplies. It contains the necessary power transformers, rectifier tubes, filter components, and miscellaneous parts to provide outputs of +500 and +1,050/1,300 volts for the IPA and PA tubes of the radio frequency amplifier and portions of the low level radio modulator. This unit is energized by the controls on the low voltage power supply front panel. The +500-volt supply is used when the equipment is operating at the 100-watt and the 500-watt levels, but the +1,050/1,300-volt supply is used only at the 100-watt level. The +1,050 volts is used with phone service only, whereas the +1,300 volts is used with all other modes of transmission. The elapsed-time meters on the front panel are provided for logging transmitter group tube hours (filament and plate).

(6) ELECTRICAL EQUIPMENT CABINET CY-1571/SRT (TRANSMITTER GROUP CABINET). (See figure 1-10.)—The transmitter group cabinet houses the five drawer-type chassis described above. It consists of a rigid welded steel frame with thin side, rear, and top panels. Struts are provided to stiffen the structure. The bottom is arranged to bolt to Mounting MT-1423/SRT or to one of the booster cabinets. Provisions for lifting eyes are incorporated in the top. Each drawer chassis slides into the cabinet on a slide and track arrangement, which permits easy insertion and removal. Ducts in the sides of the cabinet distribute the filtered forced air from the mounting to ventilate the transmitter chassis. Provision is made at the top rear of the cabinet for attaching two side sway mounts. Seven terminal boards are provided on the bottom of the cabinet and one on the lower left rear of the cabinet to which all transmitter group external connections are made. R-f

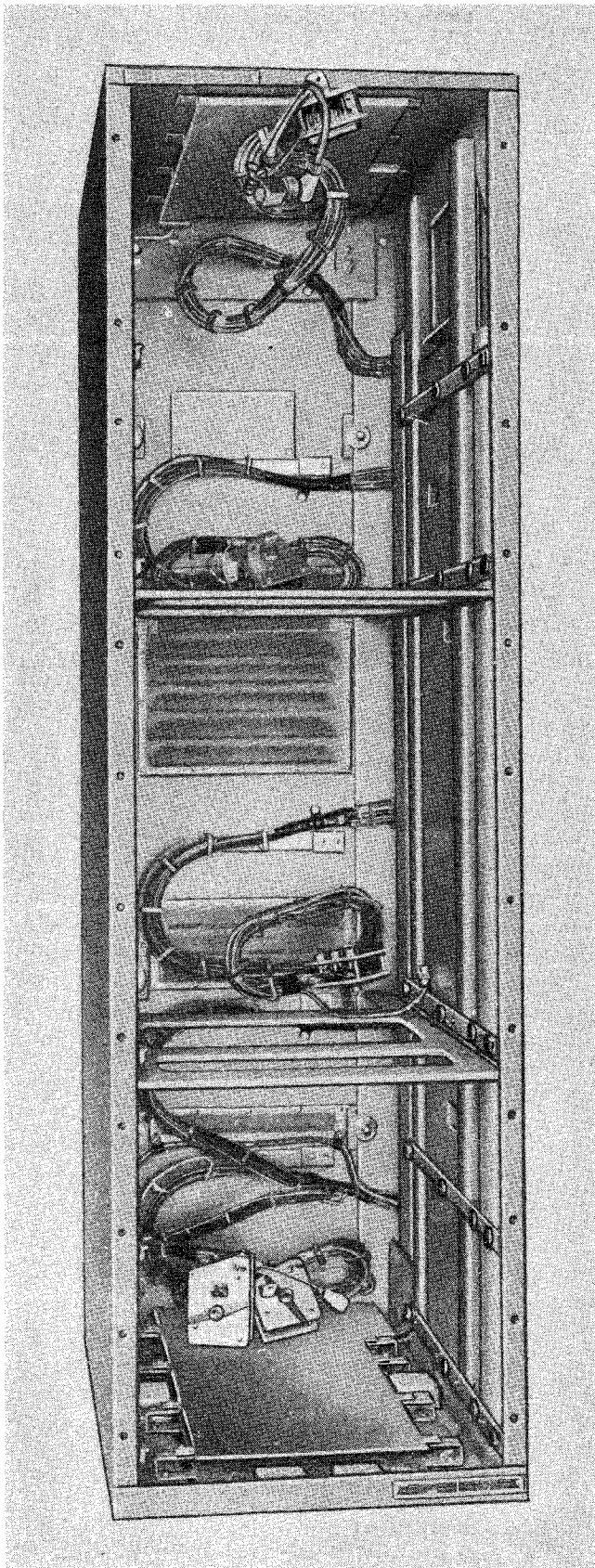


Figure 1-10. Electrical Equipment Cabinet
CY-1571/SRT, Front Oblique View

output is supplied on a 50-ohm coaxial cable terminated in an "N" type connector. Receptacles at the rear of the drawer chassis mate with corresponding receptacles, which, in turn, are connected to the retractable cabinet wiring. The retractable cabinet wiring allows a chassis to be pulled out from the cabinet to the limits of the front rail stop without disconnecting the chassis from the cabinet wiring.

(7) TRANSMITTER COUPLER CU-402/SRT (LOAD ADJUSTING UNIT, LAU). (See figure 1-11.)

—The load adjusting unit (LAU) has a mounting bracket as an integral part to permit independent mounting of this unit. It consists of an autotransformer with four taps and a standing-wave ratio monitor circuit. An input switch and an output switch, each with four positions that are connected to the four taps of the autotransformer, are also components of this unit.

The r-f output of the radio frequency amplifier is connected by interconnecting cabling to the standing-wave ratio monitor and then to the input switch and one of the taps of the autotransformer, which acts as an impedance matching device. The output from the autotransformer from the tap selected by the output switches is fed to Antenna Coupler CU-372/U. The standing-wave ratio monitor circuit detects the standing-wave ratio on the r-f transmission line at this point and sends the indicating voltages to the control indicator. The r-f output is then interconnected from the standing-wave ratio monitor circuit to the antenna coupler.

c. MOUNTING MT-1423/SRT (MOUNTING). (See figure 1-12.)—The mounting supports the transmitter stack, provides forced ventilation, and is the cable entrance point for the transmitter bay.

The mounting contains the blower assembly that provides filtered forced-air ventilation through ducts on either side of the transmitter cabinet shells. There are two blowers in each unit. One rotates clockwise and the

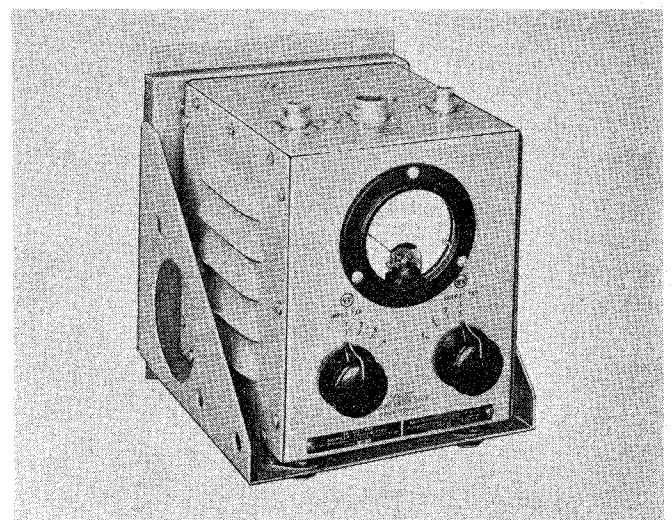


Figure 1-11. Transmitter Coupler CU-402/SRT,
Front Oblique View

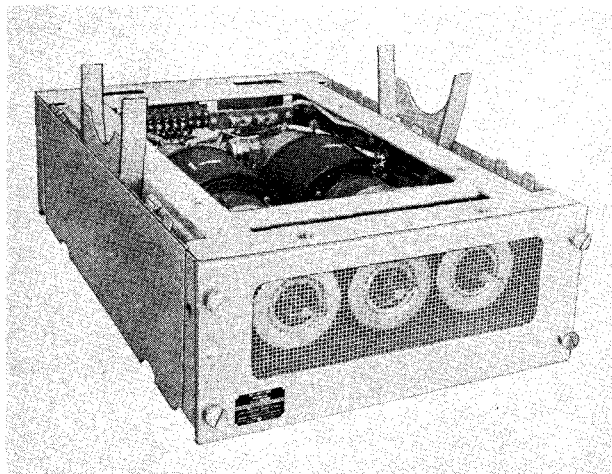


Figure 1-12. Mounting MT-1423/SRT,
Front Oblique View

other counterclockwise. Three cleanable oiled wire-mesh filters remove dust from the incoming air. Each mounting contains four heater strips whose function is to convection heat the Electrical Equipment Cabinet CY-1571/SRT air when the transmitter bay is operated under low ambient temperature conditions. Operation of the heaters is controlled by the CABINET HEATER switch on the low voltage power supply.

The transmitter group cabinet or one of the booster cabinets may be bolted to the top of the mounting. Shock mounts of suitable load rating must be attached to the bottom of the mounting. The shock mounts tend to isolate the equipment stack from severe mechanical shocks.

Provisions for interconnecting cable entrance are at the rear and also on the bottom of the rear. For transmitter bay interstack cable passageway, a hole is provided on the side of the mounting. Two ground straps are provided at diagonally opposite points for transmitter bay grounding.

d. RADIO MODULATOR-POWER SUPPLY OA-685/SRT (BOOSTER).—The radio modulator-power supply (usually called the "booster") provides additional audio and plate power to increase the r-f carrier output of the Transmitter Group OA-684/SRT to 500 watts. Limitations within the transmitter and antenna tuning equipment make it impractical to obtain 500-watt carrier on the lower frequencies, 0.3 to 2 mc. With this exception, all features of the 100-watt transmitter are retained when high power operation is used. Transmitter and antenna tuning is performed at the 100-watt level; high power is applied only when tuning has been completed.

The booster consists of the following units:

- (1) Radio Modulator MD-230/SRT
(High Level Radio Modulator, HLRM)
- (2) Power Supply PP-1096/SRT
(High Voltage Power Supply, HVPS)

- (3) Electrical Equipment Cabinet CY-1572/SRT
(High Level Radio Modulator (HLRM)
Cabinet)
- (4) Electrical Equipment Cabinet CY-1573/SRT
(High Voltage Power Supply (HVPS)
Cabinet)

The mechanical construction of the booster components is similar to that used in the transmitter group. The high level radio modulator (HLRM) and the high voltage power supply (HVPS) are of the pull-out-drawer design and are housed in individual cabinets equipped with slide and rail arrangement. All features of the transmitter group drawers are also incorporated in the booster drawers. For reasons of ventilation and mounting, the booster components must be associated with Mounting MT-1423/SRT. The booster cabinets may be combined in various ways with a transmitter group and mounting to form a transmitter bay suitable for local conditions. The transmitter bay assembly variations are discussed in Section 3 of this instruction book.

(1) RADIO MODULATOR MD-230/SRT (HIGH LEVEL RADIO MODULATOR, HLRM). (See figure 1-13.)—This unit is commonly called the high level radio modulator (HLRM) to distinguish it from the radio modulator in the 100-watt transmitter group. It modulates the radio frequency amplifier during phone service at the nominal 500-watt power level. A push-pull high level audio amplifier consisting of two 4D21 tetrodes operating in class AB₂ provides plate modulation for the final radio frequency amplifier stage. Six watts of audio power to drive the high level radio modulator are supplied from the low level radio modulator.

The control that energizes the action of the HLRM is located on the RFA front panel.

In an AN/SRT-16 the output of the HLRM is connected to one transmitter group only. The choice of which transmitter group will be able to operate at the 500-watt level is made at installation time when the output of the HLRM is permanently interconnected with one transmitter group.

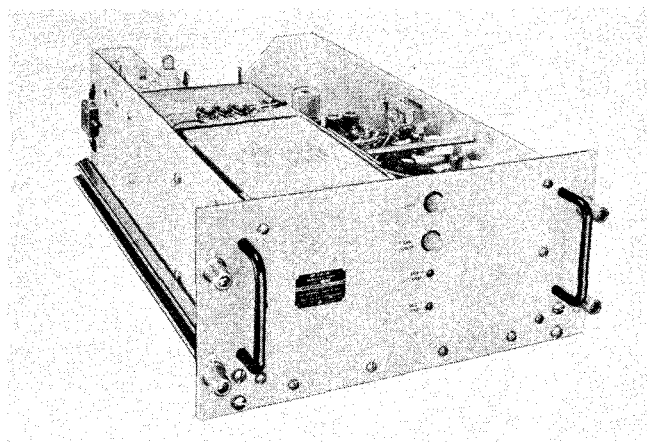


Figure 1-13. Radio Modulator MD-230/SRT,
Front Oblique View

**GENERAL
DESCRIPTION**

**NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A**

**Section 1
Paragraph 4 d (1)**

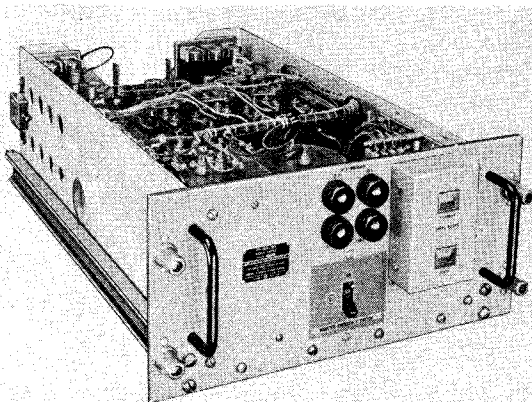
The HLRM has self-contained +50-volt d-c and regulated +350-volt d-c power supplied as local bias and screen supplies.

(2) **POWER SUPPLY PP-1096/SRT (HIGH VOLTAGE POWER SUPPLY, HVPS).** (See figure 1-14.)— This unit is called the high voltage power supply (HVPS) to distinguish it from the power supplies in the 100-watt transmitter group.

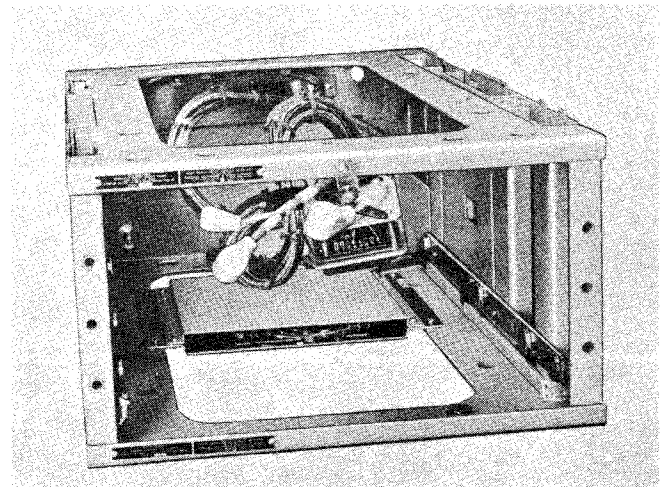
The high voltage power supply consists of six 3B28 hot cathode gas rectifier tubes in a three-phase, full-wave rectifier circuit with a choke input filter. It provides an output of either +2,400-volt or +3,000-volt d-c power as required for the plate of the 4-400A tetrode in the radio frequency amplifier. The +2,400 volts is used for phone service only, whereas the +3,000 volts is used with all other modes of transmission. By means of links, the input connections may be changed to accommodate either 220- or 440-volt, three-phase, 60-cps primary power.

An emergency switch on the front panel controls the three-phase input power. Filament power is applied to the high voltage power supply (and the high level radio modulator) whenever the **BOOSTER EMERGENCY SWITCH** is ON. Application of plate power is controlled by a time delay element and the push-button switch on the RFA of the transmitter group. Indicator lamps are provided to show power on and time delay status.

(3) **ELECTRICAL EQUIPMENT CABINET CY-1572/SRT (HIGH LEVEL RADIO MODULATOR (HLRM) CABINET).** (See figure 1-15.)— This unit provides facilities for mounting the high level radio modulator (HLRM) chassis and for booster external connections. It consists of a rigid welded frame with sheet metal side and rear panels. A slide and rail arrangement allows easy insertion and removal of the high level radio modulator drawer. Ducts in the sides of the cabinet distribute the filtered forced air from the mounting to ventilate the HLRM chassis. Receptacles connected to the retractable cabinet wiring mate with the high level radio modulator chassis connectors. At the



**Figure 1-14. Power Supply PP-1096/SRT,
Front Oblique View**

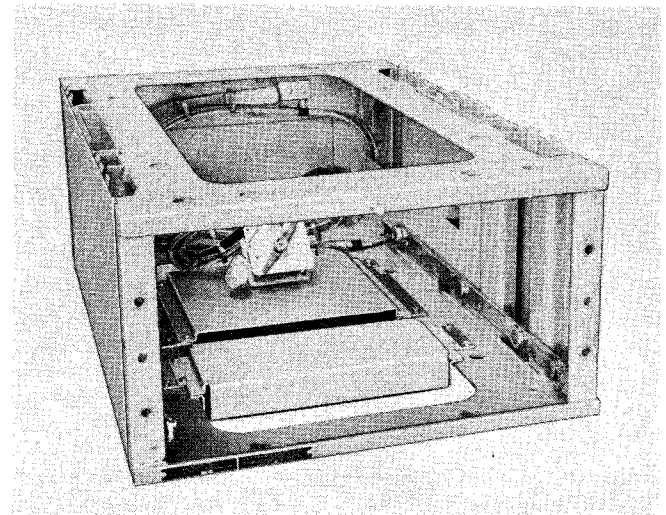


**Figure 1-15. Electrical Equipment Cabinet
CY-1572/SRT, Front Oblique View**

bottom two terminal boards are provided and one at the left rear to which all incoming connections to the high level radio modulator are made.

(4) **ELECTRICAL EQUIPMENT CABINET CY-1573/SRT (HIGH VOLTAGE POWER SUPPLY (HVPS) CABINET).** (See figure 1-16.)— This unit provides facilities for mounting the high voltage power supply (HVPS) and for external power and control connections. Mechanically the cabinet is similar to the high level radio modulator cabinet described above. Three terminal boards at the bottom and one at the left rear are provided for connecting cables to the high voltage power supply cabinet.

e. **COVER CW-341/SRT.** (See figure 1-2.)— The booster cover is used to close the top of one of the two booster cabinets for reasons of safety and appearance. Louvers permit adequate air flow for cooling. The cover is associated only with the AN/SRT-15 booster.



**Figure 1-16. Electrical Equipment Cabinet
CY-1573/SRT, Front Oblique View**

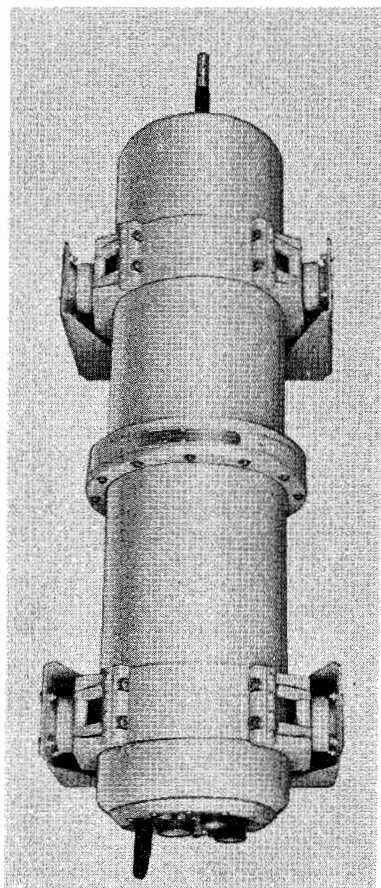


Figure 1-17. Radio Frequency Tuner TN-229/SRT, Side View, Cover On

f. REMOTE CONTROL UNIT.—To operate the AN/SRT-14, 15 and 16 sets from a remote location requires some form of power control and microphone or keying input arrangement at the remote location. The AN/SRT-14, 15 and 16 are designed to work with a standard Navy six-wire transmitter control circuit in accordance with Specification MIL-G-946 of September 15, 1949.

A typical remote unit is Radiophone Unit Navy Type 23500. This unit is a nonwatertight cabinet equipment to control transmitter operation. It is provided with a transmitter START-STOP push button, receptacles for a Navy head set or chest set, a jack for a hand key, and a gain control to adjust the receiver signal level. Indicator lamps are provided for TRANSMITTER ON and CARRIER ON indications.

This unit is not supplied with the AN/SRT-14, 15 or 16 but it, or an equivalent, must be supplied by the installing activity if remote operation is desired.

g. RADIO FREQUENCY TUNER TN-229/SRT (R-F TUNER). (See figures 1-17 and 1-18.)—The function of the antenna tuning equipment is to match the characteristic 50-ohm impedance of the r-f transmission lines to the impedance presented by the antenna over the

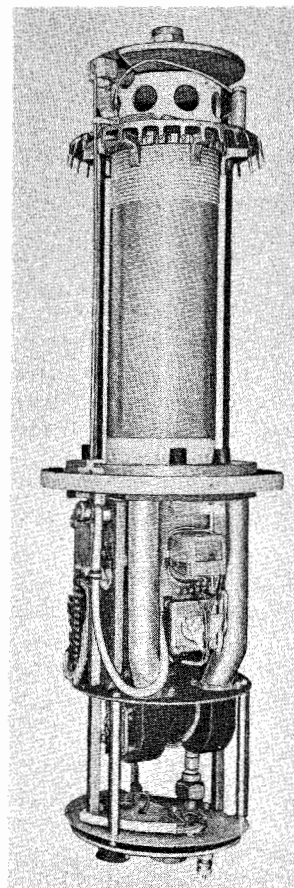


Figure 1-18. Radio Frequency Tuner TN-229/SRT, Side View, Cover Off

entire frequency range. The principal tuning component to accomplish this is the main tuning coil found in the r-f tuner. This coil is a helically wound length of transmission line whose length can be varied by the position of a concentric sliding short. Concentric with the main coil and mounted on the sliding short is a single coupling coil. The sliding short is positioned by a drive motor and associated gear train; the drive motor is controlled from the control-indicator in the transmitter bay. Also located in the r-f tuner is an impedance transformer that can be inserted or removed from the transmission line by a motor-driven switch that, in turn, is controlled at the control-indicator. This impedance transformer is a step-up transformer required to be used at the low frequencies to bring the antenna impedance up to the 50-ohm level.

A blower for heat dissipation is provided. A thermostatic switch, which is normally closed and a blower centrifugal switch, which is closed only when the blower is rotating, are provided as safety devices when the equipment is operated at the 500-watt level. If either or both of these switches are open, the transmitter can function at the 100-watt level only.

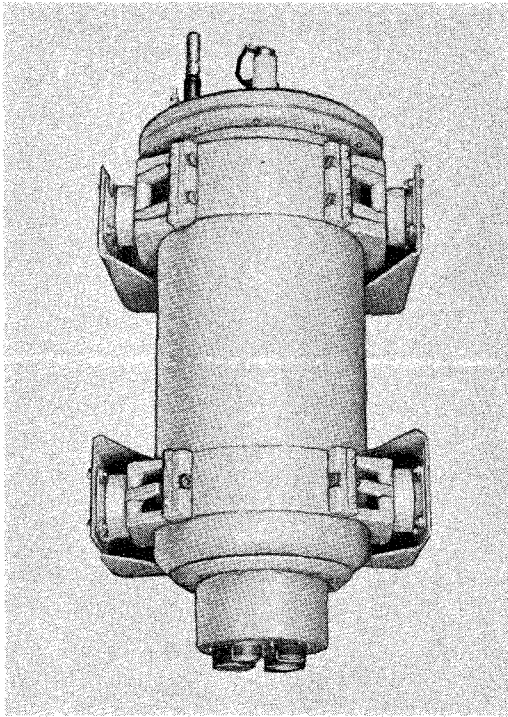


Figure 1-19. Antenna Coupler CU-372/SRT, Side View, Cover On

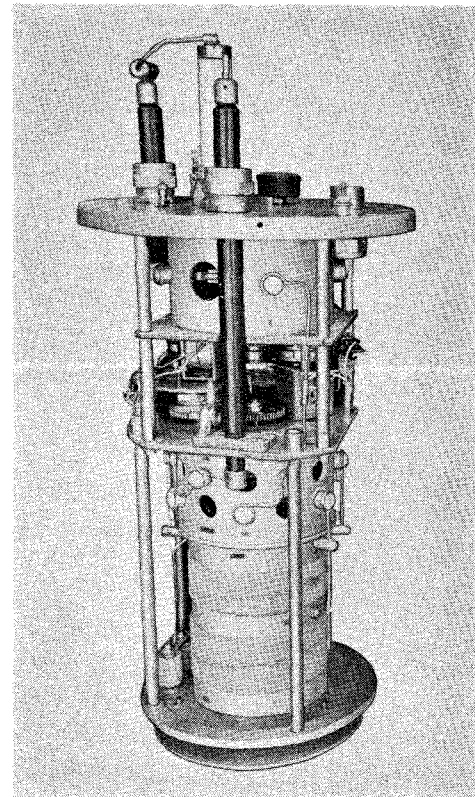


Figure 1-20. Antenna Coupler CU-372/SRT, Side View, Cover Off

The r-f tuner is a sealed, moistureproof unit, equipped with valves and a pressure gauge to permit pressurizing the unit to a pressure of 20 psi with dry nitrogen gas.

b. ANTENNA COUPLER CU-372/SRT (ANTENNA COUPLER). (See figures 1-19 and 1-20.)—The antenna coupler has two basic functions: (1) to switch various inductive or capacitive reactance components into the transmission line to extend the range of tuning of the main tuning coil, and (2) to provide a switch that permits the antenna to be connected through the tuning components to the transmitter r-f output or connects the antenna directly to the transmitter r-f output.

For the purpose of extending the tuning range of the main coil in the r-f tuner, there are three capacitors and two coils in the antenna coupler that can be inserted in various combinations, in series or in shunt, with the main tuning coil. A motor-driven switch selects the component desired; the switch is controlled from the control-indicator in the transmitter bay. This switch also has a position in which no loading components are added, leaving the main tuning coil in the r-f tuner as the only tuning component in use.

The switch to either bypass the tuning components or insert them on the transmission line also is a motor-driven switch, with two positions, that is manually controlled at the control-indicator.

Like the r-f tuner, the antenna coupler is a sealed unit with the same provisions for charging with dry nitrogen gas.

TABLE 1-4. STANDARD TEST EQUIPMENT REQUIRED FOR AN/SRT-14, 15 AND 16

| NOMENCLATURE | CHARACTERISTICS |
|--|--|
| Multimeter ME-25A/U | 0 to 1,000 volts ac/dc in 7 ranges; 0 to 1,000 ma in 6 ranges; 0 to 1,000 megohms in 6 ranges. |
| Oscilloscope OS-8A/U | Sensitivity, 0.1 v (RMS)/in.; response, ± 3 db from 30 cps to 2 mc. |
| Frequency Meter AN/USM-29 or AN/FRM-3 | 15 kc to 26 mc in 10-cps steps; accurate to within 0.0001%, ± 4 cps; (± 1 cps in one megacycle, ± 4 cps). |
| Receiver Navy type RBA | Frequency coverage: 15 kc to 500 kc. |
| Receiver Navy type RBB | Frequency coverage: 500 kc to 4.0 mc. |
| Receiver Navy type RBC | Frequency coverage: 4.0 kc to 27.0 mc. |
| Audio Oscillator TS-382A/U | 20 to 20,000 cps, $\pm 2\%$; output, 0 to 100 mw. |
| Dummy Load DA-91/U | 50 ohms, 600 watts; air cooled. |
| Signal Generator, RF, AN/URM-25 | 10 kc to 50 mc; output, 2 v maximum. |
| Ammeter, DC, Navy type 60107 | 0 to 1,000 ua, in 5 ranges; accuracy, $\pm 2\%$. |
| Resistance Bridge ZM-4/U | 1-10 megohms; accuracy, $\pm 0.15\%$. |
| Radio Frequency Bridge Navy type 60094 | Range 400 kc to 60 mc; resistance 0-1,000 ohms, $\pm 1\%$; reactance, 0-5,000 ohms at 1 mc, $\pm 2\%$. |

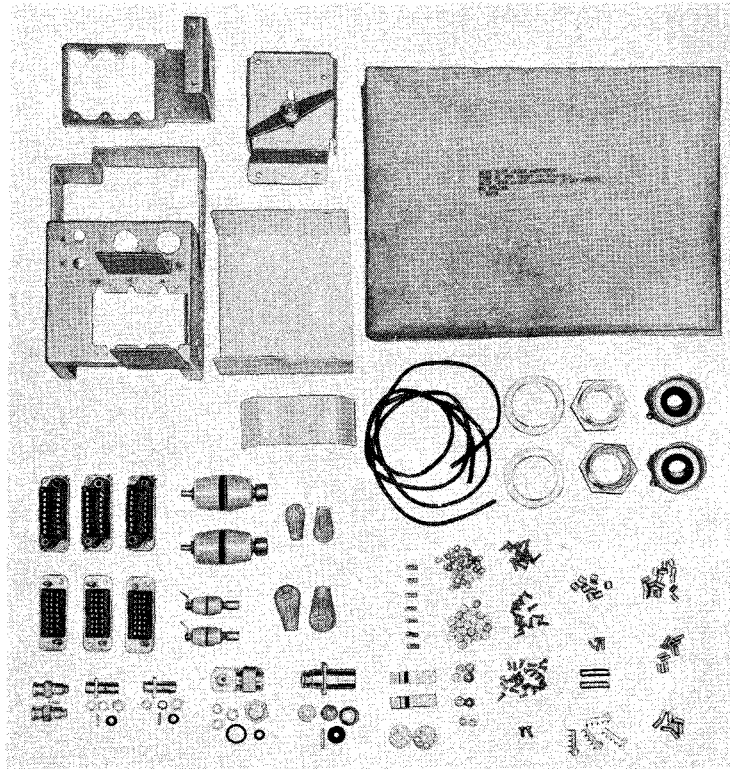


Figure 1-21. Main Test Cable Assembly, AN/SRT-14, 15 and 16

i. ANTENNAS.—Radio Transmitting Sets AN/SRT-14, 15 and 16 are designed to work into a 35-foot whip antenna, Navy type C-66047, or into a 60-130-foot long single wire with a 40-foot down lead. Suitable antennas must be furnished by the installing activity.

j. STANDARD TEST EQUIPMENT.—For the purposes of corrective and preventive maintenance and making the initial trial operation and adjustments, various pieces of Navy standard test equipment are required as outlined in table 1-4.

k. SPECIAL TEST EQUIPMENT.—In corrective maintenance, certain conditions may warrant the removal of a unit from its cabinet to be worked on at a bench. To permit the energizing of the unit while on a bench, a patch test cable that will match the connectors of the unit at one end and match the corresponding cabinet connectors at the other end will be needed. This test cable is supplied unassembled and less the wires (figure 1-21). At the time of installation, the installing activity is to supply the wires and assemble the cable. Instructions for the assembly of this test cable are found in Section 3, paragraph 6, of this instruction book.

In performing maintenance on any of the plug-in subunits of the radio frequency oscillator, it may be necessary to remove the subunit from the main radio frequency oscillator chassis. In such a case a set of test cables will be required to patch between the subunit and the main chassis. Required for this purpose are six r-f

cables and two power cables. The r-f cables each consists of a three-foot length of RG-58A/U coaxial cable terminated at one end in a UG-88/U connector and terminated at the other end with a UG-89/U connector. The make-up of the two power cables is shown in table 1-5. Connections should be made wire for wire between corresponding terminals (i.e., pin A to pin A). These power cables also should be three feet in length.

Note

The RFO subunit test cables are not supplied with the AN/SRT-14, 15 and 16.

l. SPECIAL TOOLS.—A set of suitable hex wrenches mounted in spring clips for the hex socket head set-screws are provided mounted on the radio frequency amplifier chassis, a second set being mounted on the rack (unit 14) of the radio frequency oscillator. A hex key for securing the drawer front panel screws is located on the front of the low voltage power supply of the transmitter bay. A special screwdriver for tuning components in the radio frequency oscillator is also provided. Included with each antenna coupler and r-f tuner is a special wrench for disassembling the spring-loaded switch contacts.

The following additional tools are recommended equipment:

Relay contact burnisher.

"Tru-arc" standard pliers (external) Nos. 0012; 0015; 0018; #2; #4; #6.

TABLE 1-5. RFO SUBUNIT TEST CABLES
(POWER)

| CONNECTORS REQUIRED | CONNECTOR TERMINAL | WIRE GAUGE | TYPICAL COLOR CODE |
|--|-----------------------|---------------|--------------------------|
| Winchester Electronics part Nos. MRE14PG and MRE14SG; also two hoods part No. MRE14H; (Cable #1) | A | — | — |
| | B | 22 | Red |
| | C | — | — |
| | D | 20 | Grn |
| | E | 22 | Bl |
| | F | 20(sh)* | Or |
| | H | 20(sh)* | Gray |
| | J | 22 | Yel |
| | K | 20 | Brn |
| | L | 20 | Tan |
| | M | 22 | Lt Grn |
| | N | 22 | Clr |
| | P | 22 | Wh |
| | R | 22 | Mar |
| | Grd Post | 20 | Blk |
| Winchester Electronics part Nos. MRE21PG and MRE21SG; also two hoods part No. MRE21H; (Cable #2) | A | — | — |
| | B | 22 | Bl |
| | C | 22 | Or |
| | D | — | — |
| | E | — | — |
| | F | 20(sh)* | Brn |
| | H | 20(sh)* | Wh |
| | J | 22 | Grn |
| | K | 22 | Gray |
| | L | 22 | Lt Grn |
| | M | 22 | Tan |
| | N | 22 | Mar |
| | P | — | — |
| | R | — | — |
| | S | — | — |
| | T | 22 | Bl |
| | U | 22(sh)* | Or |
| | V | — | — |
| | W | — | — |
| | X | 22(sh)* | Wh |
| Y | 22(sh)* | Clr | |
| Grd Post | 20 | Blk | |
| Grd Post | 20 | Blk | |

* Shields to be grounded on ground posts.

Tweezers—150 mm long, straight tips.

Tweezers—150 mm long, bent tips.

Closed socket wrench set detachable socket 3/8 and 1/2 in. drive, SNSN G41-W-2997.

Hex key wrench and screwdriver set ratchet handle SNSN G41-H-1395-615.

Pencil-type soldering iron.

m. INSTALLATION MATERIALS.—Furnished with each AN/SRT-14, 15 and 16 is a set of installation material. Included are all the hardware items, shock mounts, connectors, etc., required to mechanically install and electrically interconnect each type of equipment. The installation material is packaged separately together with the main test cable assembly.

n. SPARE PARTS.—Equipment spare parts are furnished and packed on a major unit basis as per table 1-8. The spare parts are shipped in consolidating cartons

that should be opened on receipt at the using ship so that these spare parts may be added to the ship's integrated electronic spare parts supply. The spare parts furnished are those parts peculiar to the AN/SRT-14, 15 and 16 that are considered most likely to require replacement in normal usage. Common electronic parts are furnished through other channels. Other replaceable parts peculiar not included in the equipment spare parts must be obtained, through authorized channels, from the nearest Navy shore supply activity.

5. REFERENCE DATA.

a. GENERAL.

- (1) Nomenclature: Radio Transmitting Sets AN/SRT-14, 14A, 15, 15A, 16 and 16A.
- (2) Contract data: NObsr-52021, dated 1 September 1950.
NObsr-52622, dated 14 May 1951.
- (3) Contractor: Federal Telephone and Radio Company, Clifton, N.J.
- (4) Cognizant Naval Inspector: Inspector of Naval Material, Newark, N.J.
- (5) Number of packages involved per complete shipment of equipment:

| | | | |
|--|---------------|---------------|---------------|
| | AN/ SRT-14 | AN/ SRT-15 | AN/ SRT-16 |
| | 7 | 10 | 14 |
- (6) Number of packages involved in equipment spares:

| | | | |
|--|---|---|----|
| | 4 | 7 | 10 |
|--|---|---|----|
- (7) Total cubical contents (including spares):

| | | | | |
|--|----------|------|-------|-------|
| | crated | 76.5 | 105.9 | 173.5 |
| | uncrated | 33.6 | 44.9 | 74.2 |
- (8) Total weight (including spares):

| | | | | |
|--|----------|-------|-------|-------|
| | crated | 1,842 | 2,649 | 4,274 |
| | uncrated | 1,315 | 1,990 | 3,124 |

b. ELECTRICAL INFORMATION.

- (1) Frequency range: 0.3 to 26 mc.
- (2) Tuning bands:

| | |
|-------------------|-----------------|
| (a) 0.3 to 0.8 mc | (d) 5 to 11 mc |
| (b) 0.8 to 2 mc | (e) 11 to 19 mc |
| (c) 2 to 5 mc | (f) 19 to 26 mc |
- (3) Nominal carrier output for each type of emission:

| | | | |
|---------------|---------------|---------------|--------------------------------------|
| | AN/ SRT-14 | AN/ SRT-15 | AN/ SRT-16 |
| A1, F1 and F4 | 100 watts | 100/500 watts | two 100 watts or one 500 and one 100 |
| A3 | 67 watts | 67/333 watts | two 67 watts or one 333 and one 67 |

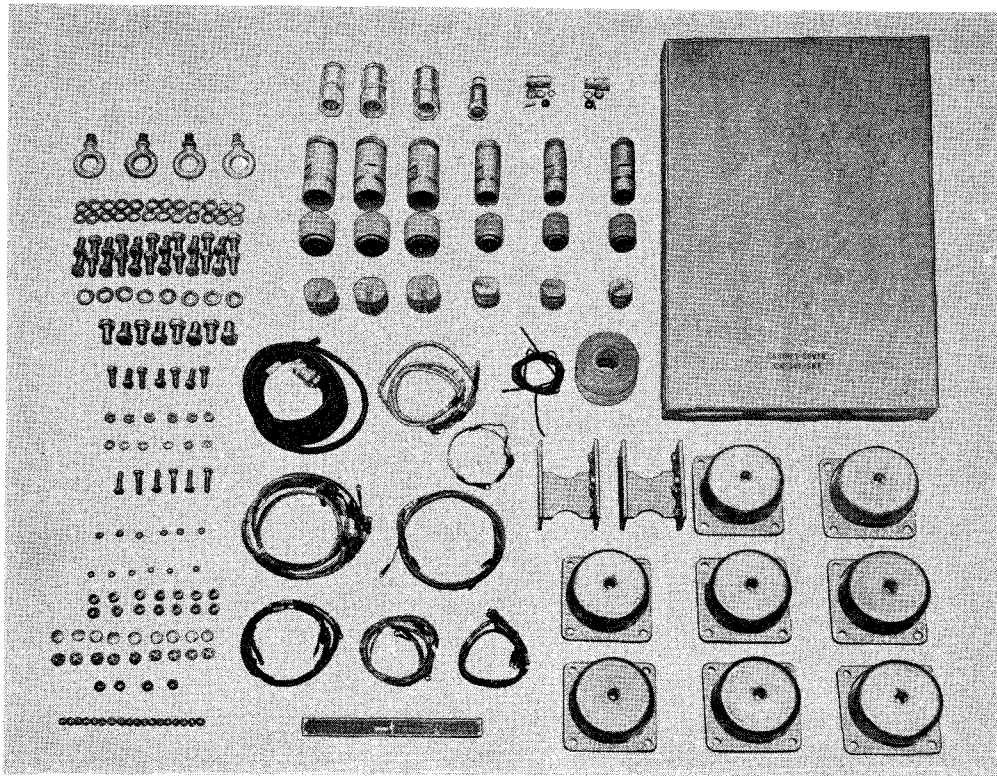


Figure 1-22. Installation Material, AN/SRT-15

Nominal carrier (See figure 1-23.)
output over fre-
quency range:

(4) Frequency control:

Crystal Oscillator: A 100-kc GT cut crystal with an accuracy of 1.5 parts per million over the temperature range -20°C . (-4°F .) to $+50^{\circ}\text{C}$. ($+122^{\circ}\text{F}$.) set in an oven regulated by a thermostat at 70°C . (158°F .)

Frequency Shift Oscillator: A 100-kc oscillator capable of being shifted from $+2,000$ cycles to -500 cycles about the 100-kc value with 5 percent linearity, with its component parts set in an oven regulated by a thermostat at 70°C . (158°F .)

(5) Types of emission and modulation capability:

A1, 100 percent, A3, 100 percent, F1 ± 500 cps shift about carrier, F4, from 0 to $+2,000$ cps shift.

(6) Squelch circuit characteristics: A conventional circuit that cuts off the audio amplifier when the microphone is not receiving voice signals.

(7) Harmonic attenuation in the amplifier:

40 db below the carrier level from 0.3 to 2 mc.
50 db below the carrier level from 2 to 5 mc.
60 db below the carrier level above 5 mc.

(8) Electrical characteristics of recommended antennas:

The antenna tuning equipment is capable of tuning an antenna system consisting of a standard 35-

foot whip antenna (Navy type 66047) or a single wire antenna between 60- and 130-foot long with 40-foot height.

(9) Power supply characteristics:

AN/SRT-14

Primary Power

(a) Voltages: 110 volts ± 10 percent, 60 cps ± 5 percent, single phase, ac.

(b) Current and power factor: Start, 15 amps at 0.92 power factor; stand-by, 7.9 amps at 0.92 power factor; operate (A1), 13.4 amps at 0.90 power factor; operate (A3), 13.6 amps at 0.92 power factor.

Oven Heater Power

(a) Voltages: 110 volts ± 10 percent, 60 cps ± 5 percent, single-phase, ac.

(b) Current and power factor: 0.8 amp at 1.0 power factor.

AN/SRT-15

Primary Power

(a) Voltages: 110 volts ± 10 percent, 60 cps ± 5 percent single phase, ac.

(b) Current and power factor: Start, 15 amps at 0.92 power factor; stand-by, 7.9 amps at 0.92 power factor; operate (A1), 13.4 amps at 0.90 power factor; operate (A3), 13.6 amps at 0.92 power factor.

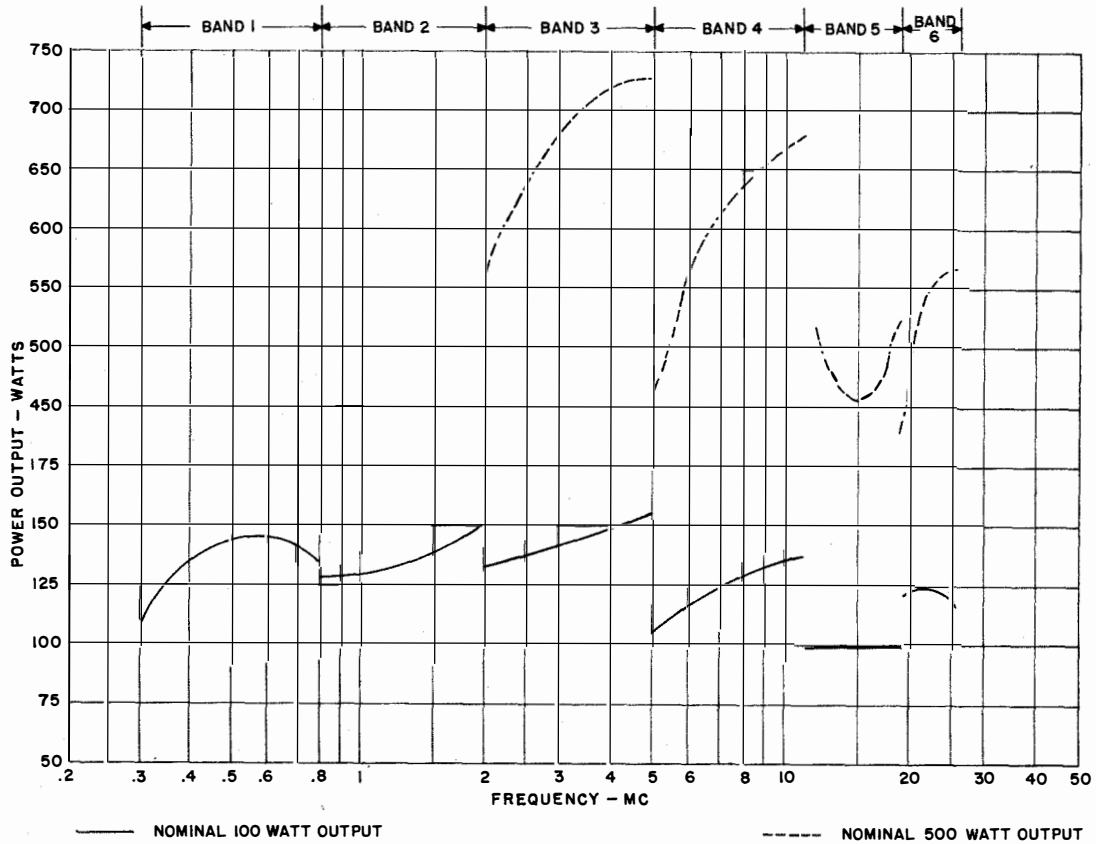


Figure 1-23. 50-Ohm Load, Typical Output Curves

Oven Heater Power

(a) Voltages: 110 volts ± 10 percent, 60 cps ± 5 percent, single phase, ac.

(b) Current and power factor: 0.8 amp at 1.0 power factor.

Booster Power

(a) Voltages: 110 volts ± 10 percent, 60 cps ± 5 percent, three-phase ac, or 440 volts ± 10 percent, 60 cps ± 5 percent, three-phase, ac.

(b) Current and power factor (220 v input): Start, 14.5 amps at 0.82 power factor; stand-by, 0.8 amp at 0.98 power factor; operate (A1), 14.7 amps at 0.82 power factor; operate (A3), 15.1 amps at 0.77 power factor.

(c) Current and power (440 v input): Start, 7.2 amps at 0.82 power factor; stand-by, 0.4 amp at 0.98 power factor; operate (A1), 7.4 amps at 0.82 power factor; operate (A3), 7.6 amps at 0.77 power factor.

AN/SRT-16

Primary Power

(a) Voltages: 110 volts ± 10 percent, 60 cps ± 5 percent, single phase, ac.

(b) Current and power factor: Start, 30 amps at 0.92 power factor; stand-by, 15.8 amps at 0.92 power factor; operate (A1), 26.8 amps at 0.90 power factor; operate (A3), 27.2 amps at 0.92 power factor.

Oven Heater Power

(a) Voltages: 110 volts ± 10 percent, 60 cps ± 5 percent, single phase, ac.

(b) Current and power factor: 16 amperes at 1.0 power factor.

Booster Power

(a) Voltages: 110 volts ± 10 percent, 60 cps ± 5 percent, three-phase, ac, or 440 volts ± 10 percent, 60 cps ± 5 percent, three-phase, ac.

(b) Current and power factor (220 v input): Start, 14.5 amps at 0.82 power factor; stand-by, 0.8 amp at 0.98 power factor; operate (A1), 14.7 amps at 0.82 power factor; operate (A3), 15.1 amps at 0.77 power factor.

(c) Current and power factor (440 v input): Start, 7.2 amps at 0.82 power factor; stand-by, 0.4 amp at 0.98 power factor; operate (A1), 7.4 amps at 0.82 power factor; operate (A3), 7.6 amps at 0.77 power factor.

(10) Heat Dissipation.

| | |
|---|------------------|
| 100-watt transmitter group and mounting | 1,600 watts max. |
| Radio Modulator-Power Supply (Booster) | 1,900 watts max. |

TABLE 1-6. EQUIPMENT SUPPLIED

| QUANTITY PER SET | | | NAME OF UNIT | NAVY TYPE DESIGNATION | OVER-ALL DIMENSIONS ¹ | | | VOLUME ¹ | WEIGHT ¹ |
|------------------|-----------|-----------|--|---|----------------------------------|-----------------|-----------------|---------------------|---------------------|
| AN/SRT-14 | AN/SRT-15 | AN/SRT-16 | | | HEIGHT | WIDTH | DEPTH | | |
| 1 | 1 | 2 | Transmitter Group consisting of one each: Radio Frequency Amplifier Radio Modulator Radio Frequency Oscillator Power Supply Power Supply Electrical Equipment Cabinet Transmitter Coupler | OA-684/SRT AM-1008/SRT MD-229/SRT O-275/SRT PP-1094/SRT PP-1095/SRT CY-1571/SRT CU-402/SRT | 55 3/8 ² | 16 ² | 26 ² | 13.3 ² | 765 ² |
| 1 | 2 | 2 | Mounting | MT-1423/SRT | 9 7/16 | 7 11/16 | 9 1/4 | 0.4 | 11 |
| 0 | 1 | 1 | Radio Modulator-Power Supply consisting of one each: Radio Modulator Power Supply Electrical Equipment Cabinet Electrical Equipment Cabinet | OA-685/SRT MD-230/SRT PP-1096/SRT CY-1572/SRT CY-1573/SRT | 7 | 16 | 24 | 1.5 | 100 |
| 1 | 1 | 2 | Radio Modulator-Power Supply consisting of one each: Radio Modulator Power Supply Electrical Equipment Cabinet Electrical Equipment Cabinet | OA-685/SRT | 18 1/4 | 16 | 26 | 4.4 | 350 |
| 1 | 1 | 2 | Radio Frequency Tuner | TN-229/SRT | 13 3/8 | 16 1/2 | 50 | 6.4 | 135 |
| 1 | 1 | 2 | Antenna Coupler | CU-372/SRT | 13 3/8 | 16 1/2 | 34 5/8 | 4.4 | 100 |
| 2 | 2 | 2 | Instruction Books | — | — | — | — | 0.1 | 6 |
| 1 | | | Installation Kit | MK-230/SRT-14 | — | — | — | 1.0 | 53 |
| | 1 | | Installation Kit | MK-232/SRT-15 | — | — | — | 2.8 | 100 |
| | | 1 | Installation Kit | MK-234/SRT-16 | — | — | — | 1.8 | 90 |
| 1 set | 1 set | 2 sets | Equipment Spares for Transmitter Group OA-684/SRT | — | — | — | — | 5.0 | 105 |
| 1 set | 2 sets | 2 sets | Equipment Spares for Mounting MT-1423/SRT | — | — | — | — | 0.5 | 7 |
| 1 set | 1 set | 2 sets | Equipment Spares for Antenna Coupler CU-372/SRT | — | — | — | — | 0.1 | 2 |
| 1 set | 1 set | 2 sets | Equipment Spares for Radio Frequency Tuner TN-229/SRT | — | — | — | — | 0.9 | 20 |
| — | 1 set | 1 set | Equipment Spares for Radio Modulator-Power Supply OA-685/SRT (less Transformer) | — | — | — | — | 2.0 | 90 |
| — | 1 | 1 | Equipment Spare Transformer (T-1502) | — | — | — | — | 1.0 | 80 |

¹ Unless otherwise stated, dimensions are inches, volume cubic feet, and weight pounds.

² Excluding Transmitter Coupler CU-402/SRT.

TABLE 1-7. EQUIPMENT REQUIRED BUT NOT SUPPLIED

| QUANTITY PER EQUIPMENT | | | NAME OF UNIT | NAVY TYPE DESIGNATION | REQUIRED USE | REQUIRED CHARACTERISTICS |
|-----------------------------|-----------|-----------|------------------------|-----------------------|------------------------------|--|
| AN/SRT-14 | AN/SRT-15 | AN/SRT-16 | | | | |
| To suit ship's requirements | | | Remote Radiophone Unit | 23500 or equivalent | Remote control and operation | Twelve-wire control system Typical Navy whip antenna or a 60- to 130-foot long single wire with a 40-foot down lead |
| 1 | 1 | 2 | Antenna | | R-f radiation | |
| 1 | 1 | 2 | Handset, Carbon | H-51/U | Voice transmission | See paragraph 4 <i>k</i> |
| 1 | 1 | 2 | Handset, Dynamic | H-52/U | Voice transmission | |
| 1 | 1 | 2 | Hand Key | 26012 | Telegraphy transmission | |
| 6 | 6 | 6 | R-f Test Cable | — | RFO corrective maintenance | |
| 2 | 2 | 2 | Power Test Cable | — | RFO corrective maintenance | |
| | | | | | | |

TABLE 1-8. SHIPPING DATA

| SHIPPING BOX NO. | CONTENTS | | OVER-ALL DIMENSIONS ¹ | | | VOLUME ¹ | WEIGHT ¹ |
|------------------|--|------------------------------------|----------------------------------|-------|-------|---------------------|---------------------|
| | NAME | DESIGNATION | HEIGHT | WIDTH | DEPTH | | |
| A | Transmitter Group (less Transmitter Coupler CU-402/SRT, Control-Indicator C-1352/SRT and Electron Tube 4-400A) | OA-684/SRT | 34 | 29 | 67 | 38.2 | 1,086 |
| B | Transmitter Coupler Control-Indicator Electron Tube | CU-402/SRT C-1352/SRT 4-400A | 13 | 17 | 20 | 2.5 | 20 |
| C | Mounting | MT-1423/SRT | 17 | 21 | 19 | 5.9 | 137 |
| D | Antenna Coupler | CU-372/SRT | 16 | 20 | 36 | 6.7 | 160 |
| E | Radio Frequency Tuner | TN-229/SRT | 16 | 20 | 55 | 10.1 | 201 |
| F | Radio Modulator-Power Supply (less two Electron Tubes 4-125A) | OA-685/SRT | 26 | 24 | 34 | 12.3 | 407 |
| G | Electron Tube (2) | 4-125A | 13 | 17 | 20 | 2.5 | 12 |
| H | Installation Kit (lot 1), Instruction Books (2) | MK-230/SRT-14 (partial) | 11 | 16 | 20 | 2.0 | 60 |
| I | Installation Kit (lot 2) | MK-230/SRT-14 (partial) | 11 | 12 | 13 | 1.0 | 12 |
| J | Installation Kit (lot 1) | MK-232/SRT-15 (partial) | 10 | 18 | 27 | 2.8 | 68 |
| K | Installation Kit (lot 2), Instruction Books (2) | MK-232/SRT-15 (partial) | 13 | 15 | 25 | 2.8 | 52 |
| L | Installation Kit (lot1) | MK-234/SRT-16 (partial) | 11 | 16 | 20 | 2.0 | 65 |
| M | Installation Kit (lot 2), Instruction Books (2) | MK-234/SRT-16 (partial) | 11 | 16 | 20 | 2.0 | 45 |

¹ Unless otherwise stated, dimensions are inches, volume cubic feet, and weight pounds.

ORIGINAL

1-21

GENERAL DESCRIPTION

NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A

Section 1

TABLE 1-8. SHIPPING DATA (Continued)

| SHIPPING BOX NO. | CONTENTS | | OVER-ALL DIMENSIONS ¹ | | | VOLUME ¹ | WEIGHT ¹ |
|---------------------|--|-------------|----------------------------------|-------|-------|---------------------|---------------------|
| | NAME | DESIGNATION | HEIGHT | WIDTH | DEPTH | | |
| N | Equipment Spares for Transmitter Group OA-684/SRT | — | 20 | 23 | 29 | 7.7 | 130 |
| O | Equipment Spares for Mounting MT-1423/SRT | — | 11 | 11 | 13 | 0.9 | 9 |
| P | Equipment Spares for Antenna Coupler CU-372/SRT | — | 7 | 7 | 8 | 0.2 | 2.5 |
| Q | Equipment Spares for Radio Frequency Tuner TN-229/SRT | — | 11 | 12 | 17 | 1.3 | 24 |
| R | Equipment Spares for Radio Modulator-Power Supply OA-685/ SRT (less spare transformer T-1502) | — | 13 | 18 | 22 | 2.9 | 106 |
| S | Equipment Spares Transformer (T-1502) | — | 14 | 15 | 19 | 2.3 | 88 |

¹ Unless otherwise stated, dimensions are inches, volume cubic feet, and weight pounds.

TABLE 1-9. ELECTRON TUBE COMPLEMENT

| UNIT | NUMBER OF TUBES OF TYPE INDICATED | | | | | | | | | | | | | | | | | | | | TOTAL | |
|-------------------|-----------------------------------|-----|------|--------|------|---------|------|------|------|-------|-----|-------|------|------|------|------|------|------|------|------|-------|------|
| | OA2 | OB2 | 3B2B | 4-400A | 4D21 | 5R4W/GB | 6AG5 | 6AG7 | 6AK6 | 6A57G | 6E5 | 12AU7 | 5651 | 5654 | 5687 | 5725 | 5726 | 5751 | 5814 | 5933 | | 6201 |
| TRANSMITTER GROUP | 1 | 2 | 4 | 1 | — | 4 | 2 | 1 | 8 | 1 | 1 | 1 | 1 | 29 | 1 | 14 | 4 | 3 | 7 | 3 | 6 | 94 |
| Radio Freq Osc | | | | | | | 2 | | 8 | | 1 | 1 | | 29 | 1 | 13 | | | 4 | | 1 | 60 |
| Unit 1 | | | | | | | | | | | | | | 1 | | | | | 2 | | | 3 |
| Unit 2 | | | | | | | | | | | | | | 2 | | | | | 2 | | | 4 |
| Unit 3 | | | | | | | | | 1 | | | | | | | | | | | | | 1 |
| Unit 4 | | | | | | | | | | | | | | 2 | | | | | | | | 2 |
| Unit 5 | | | | | | | | | | | | | | 1 | | 3 | | | | | | 4 |
| Unit 6 | | | | | | | | | 1 | | | 1 | | 4 | | 3 | | | | | | 9 |
| Unit 7 | | | | | | | | | | | | | | 4 | | | | | | | | 4 |
| Unit 8 | | | | | | | | | 2 | | | | | 3 | | 3 | | | | | 1 | 9 |
| Unit 9 | | | | | | | | | 1 | | | | | 2 | | 1 | | | | | | 4 |
| Unit 10 | | | | | | | | | | | | | | 4 | | | | | | | | 4 |
| Unit 11A | | | | | | | | | | | | | | 2 | 1 | 1 | | | | | | 4 |
| Unit 11B | | | | | | | | | 1 | | | | | 2 | | 1 | | | | | | 4 |

TABLE 1-9. ELECTRON TUBE COMPLEMENT (Continued)

| | | | | | | | | | | | | | | | | | | | | | | | |
|--|-----------|---|---|----|---|---|---|---|---|----|---|---|---|---|----|---|----|---|---|----|---|----|-----|
| Unit 11C | | | | | | | | | 1 | | | | | 2 | | 1 | | | | | | 4 | |
| Unit 12 | | | | | | | 2 | | 1 | | | | | | | | | | | | | 3 | |
| Unit 14 | | | | | | | | | | | 1 | | | | | | | | | | | 1 | |
| Radio Freq Amp | 1 | | | 1 | | | | 1 | | | | | | | | | | | | 1 | | 4 | |
| Low Level Radio Modulator | | 2 | | | | 1 | | | | 1 | | | 1 | | | 1 | 4 | 3 | 3 | 2 | 5 | 23 | |
| Low Voltage Power Supply | | | | | | 3 | | | | | | | | | | | | | | | | 3 | |
| Medium Voltage Power Supply | | | 4 | | | | | | | | | | | | | | | | | | | 4 | |
| RADIO MODULATOR-POWER SUPPLY (BOOSTER) | 1 | 2 | 6 | | 2 | | | | | | | | | | | | | | | | | 11 | |
| High Level Radio Modulator | 1 | 2 | | | 2 | | | | | | | | | | | | | | | | | 5 | |
| High Voltage Power Supply | | | 6 | | | | | | | | | | | | | | | | | | | 6 | |
| SET TOTALS | AN/SRT-14 | 1 | 2 | 4 | 1 | 0 | 4 | 2 | 1 | 8 | 1 | 1 | 1 | 1 | 29 | 1 | 14 | 4 | 3 | 7 | 3 | 6 | 94 |
| | AN/SRT-15 | 2 | 4 | 10 | 1 | 2 | 4 | 2 | 1 | 8 | 1 | 1 | 1 | 1 | 29 | 1 | 14 | 4 | 3 | 7 | 3 | 6 | 105 |
| | AN/SRT-16 | 3 | 6 | 14 | 2 | 2 | 8 | 4 | 2 | 16 | 2 | 2 | 2 | 2 | 58 | 2 | 28 | 8 | 6 | 14 | 6 | 12 | 199 |

NOTES

★

NAVSHIPS 92121(A)

INSTRUCTION BOOK

for

RADIO TRANSMITTING SETS

**AN/SRT-14, AN/SRT-14A, AN/SRT-15,
AN/SRT-15A, AN/SRT-16 AND AN/SRT-16A**

SECTION 2

THEORY OF OPERATION

FEDERAL TELEPHONE AND RADIO COMPANY

A division of INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

CLIFTON, NEW JERSEY

DEPARTMENT OF THE NAVY

BUREAU OF SHIPS

★

*Contract: NObsr-52021
NObsr-52622*

Approved by BuShips: 26 October 1955

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SECTION 2

THEORY OF OPERATION

1. INTRODUCTION.

a. FUNCTION.—Radio Transmitting Sets AN/SRT-14, 15 and 16 are designed to transmit c-w, voice, facsimile or frequency-shift signals, with a nominal 100-watt output over a 0.3- to 26-mc range. In addition, the AN/SRT-15 and the AN/SRT-16 may be operated at a nominal 500-watt output over a 2- to 26-mc range. Radio Transmitting Set AN/SRT-14 operates only at the 100-watt level. The AN/SRT-14 and the AN/SRT-15 are each limited to transmission on one frequency at a time. The AN/SRT-16 may transmit two signals simultaneously from two transmitter bays, either with both signals at the 100-watt level or with a 500-watt output from the one transmitter bay that is so equipped and a 100-watt output from the other transmitter bay. Output power is a function of frequency and may vary from 80 percent to 160 percent of the nominal output levels.

Transmission of c-w signals may emanate from either hand-key or machine-key facilities, while frequency-shift signals are generated by machine-keying signals. Tuning of all three sets is manually accomplished at the site of the transmitter bay. When used with the appropriate Navy furnished equipment, the AN/SRT-14, 15 or 16 may be energized and have key or voice signals supplied to it from a remote position. These same functions can also be accomplished locally at the site of the transmitter bay.

Note

The AN/SRT-14A, 15A and 16A are nonmagnetic versions of the AN/SRT-14, 15 and 16 respectively. As the nonmagnetic versions vary from the standard types only in the material used for cabinet panels, all information on the theory of operation of the AN/SRT-14, 15 and 16, as set forth in the following section, applies equally as well for the AN/SRT-14A, 15A and 16A.

Note

Where, throughout this section, reference is made to either low level radio modulator or high level radio modulator, it should not be interpreted as meaning the technique of modulation known as grid modulation or low level modulation, but rather as referring to the operating power level.

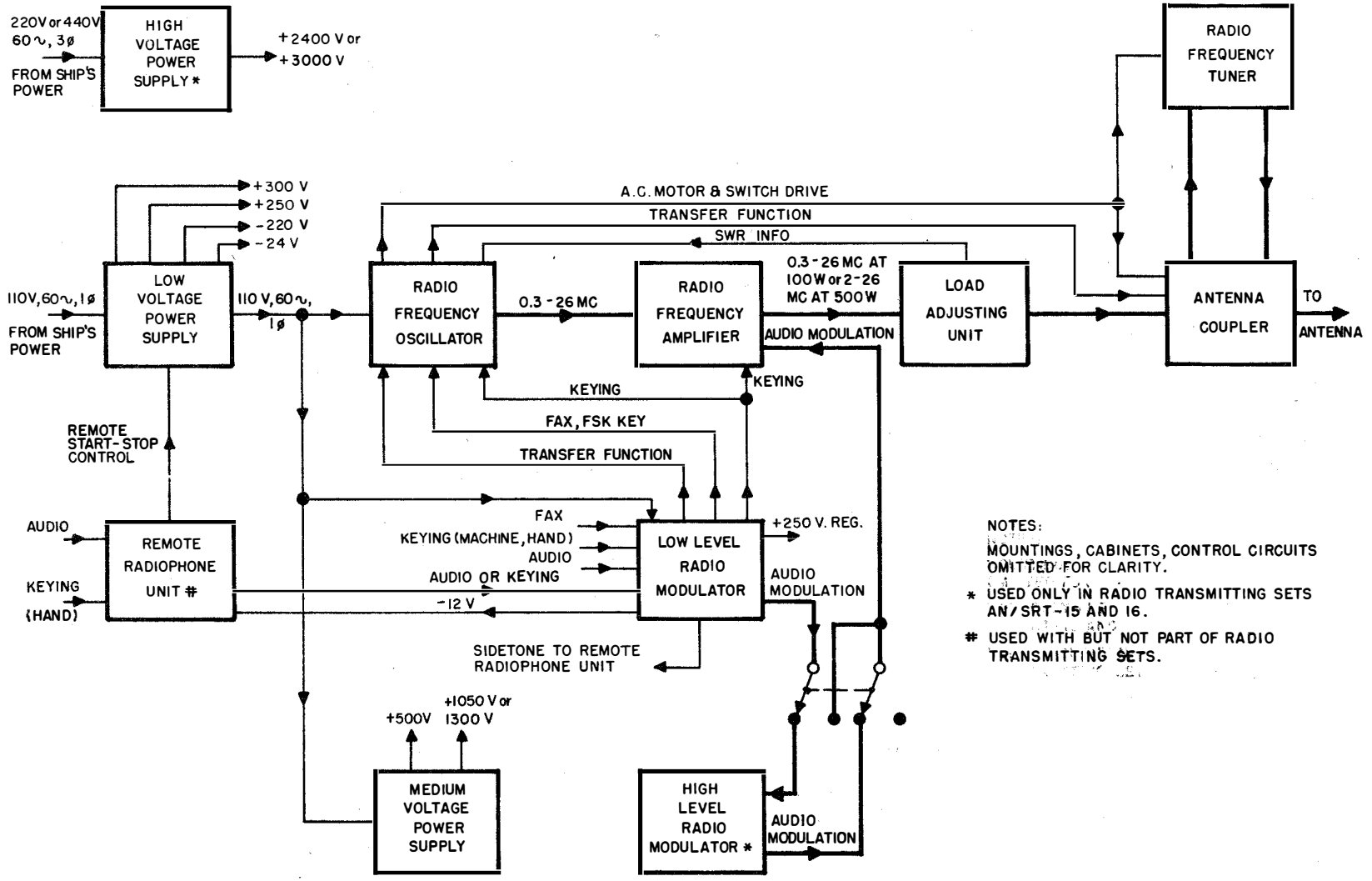
b. MAJOR UNITS.—The major units of Radio Transmitting Sets AN/SRT-14, 15 and 16 and the number of units under each set are shown in table 1-1 of Section

1. Table 1-2 of Section 1 lists, for each major unit, the official Navy nomenclature, the common title, the abbreviations, and the numerical group assigned for circuit reference symbols. The relationship between the major units and the paths of signal flow from one to another are shown in the block diagram, figure 2-1.

Each set is comprised of two general groups of equipment: the transmitter bay and antenna tuning equipment. The transmitter bay generates and modulates the signal, and the antenna tuning equipment matches the antenna load to the optimum output impedance level of the transmitter bay for maximum radiated energy. The major units of the transmitter bay are outlined in paragraphs 1*b*(1) through 1*b*(13) of this section and are shown on the functional block diagram, figure 2-129. The antenna tuning equipment is outlined in paragraphs 1*b*(14) and 1*b*(15). For greater clarity, cabinets, mountings, and control circuits are not shown in the introductory block diagrams, figures 2-1 and 2-129.

Immediately following this general discussion, a detailed circuit analysis is given, beginning with paragraph 2. In this analysis, the major components are discussed individually from the radio frequency oscillator through the antenna coupler. The descriptions of most major units are accompanied by complete block diagrams and simplified schematics. Control circuit functions are discussed within the major units, as they apply, but an overall transmitter bay control circuit description (paragraph 16) follows the discussion of the load adjusting unit and an antenna tuning equipment control circuit discussion (paragraph 17*d*) follows the description of the antenna coupler.

(1) RADIO FREQUENCY OSCILLATOR O-275/SRT (RADIO FREQUENCY OSCILLATOR, RFO).—The radio frequency oscillator (RFO) generates an r-f signal variable in steps of 10 cps from 0.3 to 26 mc. A modulated frequency shift corresponding to the keying signals from the low level radio modulator is provided for frequency-shift keying and facsimile services. These signals are produced by a set of 14 subunits that plug into a mounting and that employ oscillators, frequency multipliers, and frequency converters. During c-w and phone operation, the RFO receives a signal from the low level radio modulator to key the output of the RFO. A nominal two-volt r-f output signal from the RFO is fed to the radio frequency amplifier. In addition, mounted on the RFO front panel and considered a component of the RFO is the Control-Indicator C-1352. The control-indicator contains the controls and indicating meters required to manually control the tuning of the antenna tuning equipment.



NOTES:
 MOUNTINGS, CABINETS, CONTROL CIRCUITS OMITTED FOR CLARITY.
 * USED ONLY IN RADIO TRANSMITTING SETS AN/SRT-15 AND 16.
 # USED WITH BUT NOT PART OF RADIO TRANSMITTING SETS.

Figure 2-1. Radio Transmitting Sets AN/SRT-14, 15 and 16, Functional Block Diagram

(2) POWER SUPPLY PP-1094/SRT (LOW VOLTAGE POWER SUPPLY, LVPS).—The low voltage power supply (LVPS) is supplied with 110 volts ac from the ship's supply and distributes this power to other units. It contains rectifier circuits that provide B+ voltage of +300 volts, +250 volts, -24 volts for control circuits and motor lines, and -220 volts for bias.

(3) POWER SUPPLY PP-1095/SRT (MEDIUM VOLTAGE POWER SUPPLY, MVPS).—The medium voltage power supply (MVPS) receives 110 volts ac from the LVPS and supplies +500 volts dc to the low level radio modulator and the radio frequency amplifier and +1,300 volts, which is reduced to +1,050 volts during phone operation, to the radio frequency amplifier. In addition to the rectifier circuits, the MVPS contains a switching relay to insure that the +500-volt supply is present before the +300-volt supply in the LVPS comes on.

(4) POWER SUPPLY PP-1096/SRT (HIGH VOLTAGE POWER SUPPLY, HVPS).—The high voltage power supply (HVPS), used only in the AN/SRT-15 or 16 during 500-watt operation, is provided with a separate input of 220-volt or 440-volt, three-phase, 60-cycle ac from the ship's supply. The HVPS has a d-c output of +3,000 volts that replaces the +1,300-volt output of the MVPS during 500-watt operation. During phone operation, the +3,000 volts is reduced to +2,400 volts.

(5) RADIO MODULATOR MD-229/SRT (LOW LEVEL RADIO MODULATOR, LLRM).—The low level radio modulator (LLRM) accepts audio and keying signals from external units. It amplifies and shapes them as required to modulate the carrier in a manner selected by the operator. For 100-watt phone transmission the LLRM feeds a 50-watt modulating audio signal directly to the radio frequency amplifier; in 500-watt phone operation, the LLRM output is reduced to 6 watts and is fed to the high level radio modulator, which, in turn, amplifies it to 250 watts and then feeds it to the RFA. Audio signals are obtained locally from either a carbon or dynamic microphone or by way of a standard Navy remote radiophone unit, which restricts the input to a carbon microphone. Keying signals for frequency-shift and c-w transmission may be accepted from either machine-key or hand-key equipment. For c-w operation, the LLRM feeds keying signals directly to the RFA and RFO at either 100-watt or 500-watt levels and feeds keying signals to the unused audio amplifier chain of the LLRM, which provides a dumping action, keeping the load on the +500-volt supply of the MVPS during c-w keying. This prevents transients in the +500-volt supply. In frequency-shift key service, the LLRM reshapes the input keying signals and feeds them to the RFO. Facsimile signals are switched through the LLRM directly to the RFO. In addition to its modulating function, the LLRM has two power supplies: one is a regulated +250-volt supply used as a B+ supply for critical keying circuits in the LLRM and in the RFO, the other is a -12-volt supply for energizing a carbon microphone or supply to the remote radiophone unit.

(6) RADIOPHONE UNIT.—The remote radiophone unit (not part of Radio Transmitting Sets AN/SRT-14, 15 and 16), usually located at a remote position, consists of a power start-stop circuit and an audio and keying input circuit. The power start-stop circuit is connected to the control circuits of the LVPS and may be used to turn the transmitter on or off. The audio input circuit receives audio signals from a carbon microphone and transmits them to the LLRM. The keying input circuit receives signals from a hand-keying device and transmits them to the LLRM.

(7) RADIO MODULATOR MD-230/SRT (HIGH LEVEL RADIO MODULATOR, HLRM).—The high level radio modulator (HLRM) is used only in the AN/SRT-15 and 16 during 500-watt operation. It amplifies the six-watt audio signal developed in the LLRM and feeds it to the radio frequency amplifier to modulate the carrier.

(8) RADIO FREQUENCY AMPLIFIER AM-1008/SRT (RADIO FREQUENCY AMPLIFIER, RFA).—The radio frequency amplifier (RFA) receives an r-f signal from the RFO at any frequency from 0.3 to 26 mc. During 100-watt operation the RFA amplifies all signals within this frequency range to the required nominal 100-watt level. During 500-watt operation, only signals within the range of 2 to 26 mc are amplified to the nominal 500-watt level; selection of a frequency in the range from 0.3 to 2 mc automatically switches the output to the 100-watt level. The three stages of amplification (buffer, intermediate power amplifier, and power amplifier) that comprise the RFA are manually tuned to the frequency selected. The RFA receives a signal from the LLRM to key the carrier during c-w and phone operation. In addition, during phone operation, an audio signal is received from either the LLRM (100 watts) or HLRM (500 watts) to amplitude-modulate the carrier. The RFA output is fed to the load adjusting unit.

(9) TRANSMITTER COUPLER CU-402/SRT (LOAD ADJUSTING UNIT, LAU).—The load adjusting unit (LAU) improves the impedance match between the characteristic 50-ohm r-f output impedance of the RFA to the impedance presented by the antenna. The r-f output of the RFA is fed to the LAU. The output of LAU is fed to the antenna coupler of the antenna tuning equipment.

(10) ELECTRICAL EQUIPMENT CABINET CY-1571/SRT (TRANSMITTER GROUP CABINET).—The transmitter group cabinet houses the five chassis of the transmitter group consisting of the RFA, LLRM, RFO, LVPS, and MVPS. The cabinet is provided with retractable intercabling, mating connectors for each chassis, and terminal boards for inputs and outputs to other assemblies of the AN/SRT-14, 15 and 16. The transmitter group cabinet may rest on a Mounting MT-1423/SRT or on one of the booster cabinets. There is one transmitter group cabinet in the transmitter bay of the AN/SRT-14, another in that of the AN/SRT-15, and two in the AN/SRT-16.

(11) ELECTRICAL EQUIPMENT CABINET CY-1572/SRT (HLRM CABINET).—The HLRM cabinet houses the high level radio modulator chassis in the AN/SRT-15 and AN/SRT-16. The cabinet is provided with retractable intercabling, with mating connectors for the HLRM chassis and terminal boards for inputs and outputs to other assemblies of the AN/SRT-15 and 16.

(12) ELECTRICAL EQUIPMENT CABINET CY-3573/SRT (HVPS CABINET).—The HVPS cabinet is similar to the HLRM cabinet and houses the HVPS chassis in the AN/SRT-15 and AN/SRT-16. The terminal board for the 220/440-volt, three-phase, 60-cycle input is also contained in this cabinet. The HVPS and HLRM cabinets, together with the units they house, form Radio Modulator-Power Supply OA-685/SRT (the booster).

(13) MOUNTING MT-1423/SRT (MOUNTING).—The mounting provides mechanical support for the units of the transmitter group or booster and houses the blowers and heaters that are used to provide temperature control for the transmitter bay. All input and output cables for the transmitter bay enter through the cable access areas provided in the rear and bottom of this unit.

(14) RADIO FREQUENCY TUNER TN-229/SRT (R-F TUNER).—The r-f tuner serves as an adjustable length transmission line whose function is to sufficiently match the impedance presented by the antenna to the characteristic output impedance of the RFA so that the standing-wave ratio on the transmission line is no greater than 4:1. Tuning is accomplished by the moving of a shorting mechanism along the main coil, which constitutes the adjustable length transmission line. Control of the shorting mechanism is accomplished manually and remotely at the transmitter bay location by controls on the control-indicator, which is located on the RFO front panel.

(15) ANTENNA COUPLER CU-372/SRT (ANTENNA COUPLER).—The antenna coupler has two prime functions. Primarily, the antenna coupler is used to extend the range of tuning that can be accomplished with the main coil in the r-f tuner. This is done by switching inductance or capacitance into the antenna line to lengthen or shorten the apparent electrical length of the antenna. This switching is also manually controlled at the control-indicator. In addition, the antenna coupler contains a switch that makes it possible to bypass the tuning components completely, connecting the antenna directly to the load adjusting unit of the transmitter bay. The control-indicator unit also contains the manual control for the setting of the bypass switch.

Note

In all simplified schematics in Section 2, resistance values are expressed in ohms, capacitance values in micromicrofarads and induct-

ance values in microhenries, unless otherwise indicated. For example, a 10-ohm resistor will have its value shown on a simplified schematic as "10", whereas a 10-kilohm or 10-megohm resistor will be marked "10K" or "10M".

2. RADIO FREQUENCY OSCILLATOR O-275/SRT (RFO).

The radio frequency oscillator consists of 14 removable subunits containing the vacuum tube circuits, a mounting to which these units are secured, and a unit that is mounted on the front panel of the mounting. The RFO is the master frequency source for the transmitting set. The 14 subunits include: the crystal oscillator (unit 1); the interpolation oscillator (unit 3); the frequency-shift oscillator (unit 12); step generators for 10 kc (unit 6), 100 kc (unit 8), and 1 mc (unit 10); three frequency multipliers (units 2, 4, and 7); five frequency converters (units 5, 9, 11a, 11b, and 11c). The unit that mounts on the front panel of the RFO mounting, Control-Indicator C-1352/SRT, contains all controls and indicators required to manually tune the antenna tuning equipment components.

Note

In the schematics accompanying the RFO discussion, the outputs and inputs of the subunits are identified by numbers and lower-case letters. The number refers to the unit which produces the output signal, and the letter identifies which output is being referred to. For example, 2a is one of five outputs of unit 2, and is fed to unit 4; when it leaves unit 4, it is referred to as output 4a. These output symbols are marked on the chassis for purposes of identification.

a. GENERAL THEORY OF THE RFO. (See figure 2-2.)—The crystal oscillator (unit 1) produces a 100-kc output, accurate to within 1.5 parts per million, which is fed to: one of the frequency multipliers (unit 2), a frequency converter (unit 5), the 10-kc step generator (unit 6), and the 100-kc step generator (unit 8). This output synchronizes the step generators and, through frequency multipliers, provides the higher input frequencies required by other units of the RFO. Another portion of the 100-kc output is fed to the zero adjust indicating circuit in unit 14 to enable the operator to check the output of the interpolation and frequency-shift oscillators. Another portion is fed to an oscilloscope test receptacle in unit 14 for servicing and checking.

(1) In unit 2 (frequency multiplier) the 100-kc output of the crystal oscillator is increased to 1 mc and then fed to unit 4 (frequency multiplier), unit 5 (frequency converter), unit 6 (the 10-kc step generator), unit 7 (frequency multiplier), and unit 10 (the 1-mc step generator). Unit 4 multiplies the 1-mc input from unit 2 and produces an 8-mc output, which is fed to unit 5 (frequency converter).

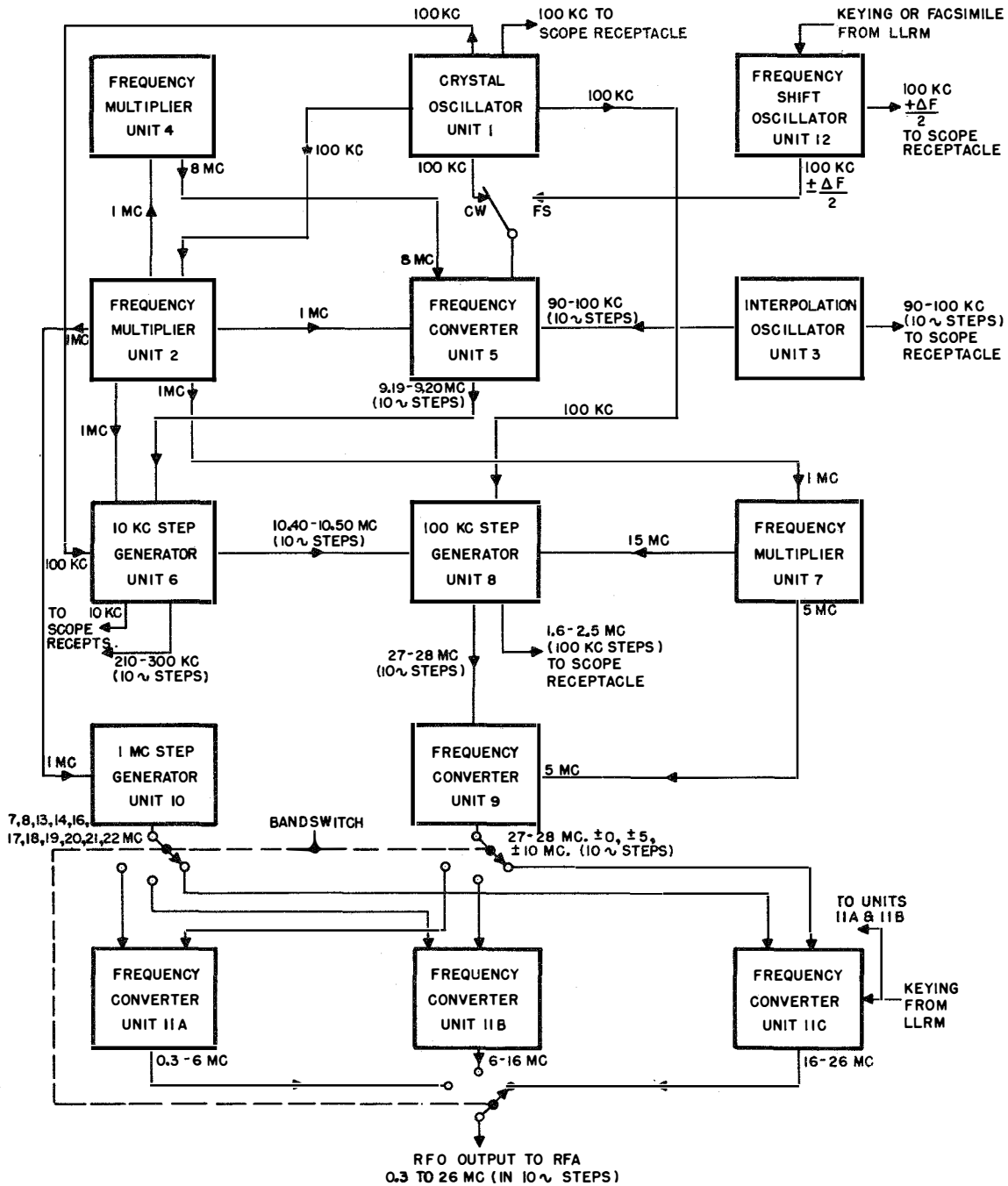


Figure 2-2. Radio Frequency Oscillator O-275/SRT (Radio Frequency Oscillator, RFO), Functional Block Diagram

(2) In addition to the 1-mc input from unit 2 and the 8-mc input from unit 4, the frequency converter (unit 5) receives outputs from the interpolation oscillator (unit 3) and either the crystal oscillator or the frequency-shift oscillator. The interpolation oscillator produces an output of 90 to 100 kc, adjustable in steps of 10 cps, 100 cps, and 1 kc. The major portion of this output is fed to unit 5 (frequency converter). Another portion is fed to an oscilloscope test receptacle for use in servicing and checking. The frequency-shift oscillator (unit 12) generates an output of 100 kc, frequency-

modulated in accordance with signals from the LLRM. For FSK operation this output may be shifted at a 240-cps rate (corresponding to teletype at 600 words a minute), a maximum of $\pm 1,000 \text{ cps} \left(\frac{\Delta f}{2} \right)$ from the knob-set frequency. For facsimile operation the output frequency shift may be adjusted from +500 to +2,000 cps for a positive 20-volt signal from the facsimile equipment. See paragraph 2f(3) for a detailed explanation of the frequency-shift range. In addition, a one-radian

maximum phase modulation at a 200-cps rate may be added for reduction of fading effects. During frequency-shift keying or facsimile operation, the output of unit 12 is fed to the frequency converter (unit 5) to replace the 100-kc signal normally supplied by the crystal oscillator (unit 1). Another portion of the frequency-shift oscillator is fed to an oscilloscope test receptacle for use in servicing and checking. Unit 5 (frequency converter), consisting of a series of conventional mixers, tuned filters and an amplifier, mixes its four input frequencies to produce an output, adjustable in steps of 10 cps, from 9.19 to 9.2 mc for cw and phone or $9.19 \text{ to } 9.2 \text{ mc} \pm \frac{\Delta f}{2}$ for frequency-shift telegraphy and $9.19 \text{ to } 9.2 \text{ mc} + \Delta f$ for facsimile operation.

(3) The output of unit 5 is fed to the 10-kc step generator (unit 6). This step generator, the major component of which is a phase-locked oscillator, receives, in addition, a 100-kc signal from the crystal oscillator and a 1-mc signal from unit 2. The 100-kc input is first used to produce outputs of 10 kc and 210 to 300 kc (in 10-kc steps) for the oscilloscope test receptacles. A portion of the last frequency is then mixed with the inputs from unit 2 and unit 5 to produce a final output of 10.4 to 10.5 mc (in steps of 10 cps), which is fed to the 100-kc step generator (unit 8).

(4) Unit 7 (frequency multiplier) receives a 1-mc signal from unit 2 and multiplies it to provide first a 5-mc signal for unit 9 (frequency converter) and then a 15-mc signal for the 100-kc step generator (unit 8). The 100-kc step generator has essentially the same design as unit 6, the 10-kc step generator. Unit 8 uses the 100-kc input from the crystal oscillator to produce an output of 1.6 to 2.5 mc (in 100-kc steps). A portion of this output is fed to an oscilloscope test receptacle for use in servicing and checking; the remainder is mixed with the inputs from unit 6 and unit 7 to produce an output of 27 to 28 mc (in steps of 10 cps), which is fed to the unit 9 frequency converter. Unit 9 mixes the 27- to 28-mc input from unit 8 with the 5-mc input from unit 7 to produce frequencies of 27 to 28 mc (± 0 , ± 5 or $+10$ mc), adjustable in 10-cps steps. These frequencies are amplified by the remainder of unit 9 and then fed to one wafer of the bandswitch. Unit 10 (1-mc step generator) receives a 1-mc signal from unit 2 and passes it through a harmonic generator that produces frequencies of 7, 8, 13, 14, 16, 17, 18, 19, 20, 21, and 22 mc. These frequencies are amplified by the rest of unit 10 and then fed to the second wafer of the bandswitch.

(5) The outputs of unit 9 and unit 10 are fed to one of the three final converters (units 11a, 11b, and 11c), only one of which is used at a time. The output frequency desired determines which of the three converters will be used; the chosen unit is connected to the outputs of unit 9 and unit 10, and to the RFO mounting (unit 14) by the bandswitch. Unit 11a is used for frequencies between 0.3 and 6 mc; unit 11b for the 6- to 16-mc range, and 11c for outputs of 16 to 26 mc.

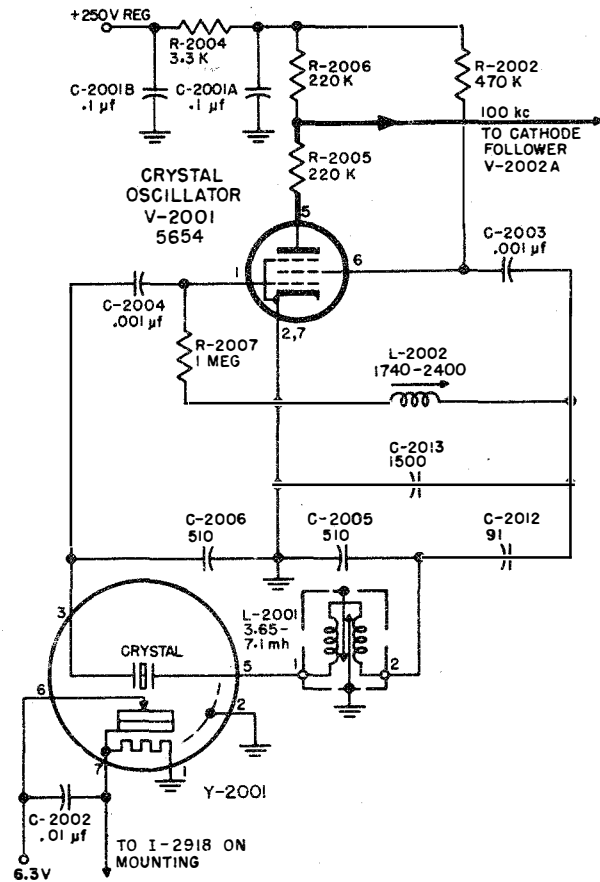


Figure 2-3. RFO Unit 1, Crystal Oscillator V-2001, Simplified Schematic

(6) The mounting (unit 14) serves as a rack into which the other units of the RFO are plugged. Unit 14, in turn, plugs into the transmitter group cabinet wiring. In addition to interunit cabling, unit 14 includes manual frequency controls, test points, the bandswitch for selecting the final frequency converter (unit 11a, 11b or 11c), oscilloscope test receptacles, an indicating circuit for adjusting the outputs of the interpolation and frequency-shift oscillators, a door interlock switch, heater and filament power supplies, and heater indicator lights.

(7) Control-Indicator C-1352/SRT, which mounts on the unit 14 front panel, contains the following controls and indicators for the manual tuning of the antenna tuning equipment: controls for manual setting of the effective length of the main tuning coil in the radio frequency tuner, a control for selecting a value of inductance or capacitance found in the antenna coupler to extend the range of tuning of the main coil when required, a control for bypassing the antenna tuning equipment, a control for adding an impedance transformer in the r-f transmission line in the radio frequency tuner, an indicator to record the position of the shorting ring on the main tuning coil in the radio frequency tuner, and an indicator to measure the standing-wave ratio existing on the r-f transmission line.

b. RADIO FREQUENCY OSCILLATOR Z-2001 (CRYSTAL OSCILLATOR, UNIT 1).—The crystal oscillator (unit 1) is one of the basic frequency sources of the transmitter. The output of unit 1, a crystal-controlled 100-kc signal, is processed by other subunits in the RFO to obtain higher frequencies. Other frequency sources in the RFO, such as the 10-kc step generator and the 100-kc step generator, are synchronized by the crystal oscillator and are thus locked to an accurate, crystal-controlled frequency standard. Two additional frequency sources, the interpolation oscillator and the frequency-shift oscillator, are provided with frequency generators that are not locked to the crystal oscillator. However, the output of these frequency converters may be compared with the output of the crystal oscillator by means of the zero adjust indicating circuit located in unit 14, employing an electron ray indicating tube. Adjustments are provided for obtaining minimum shadow angle on the electron ray tube, which indicates when the frequency of the interpolation oscillator or the frequency-shift oscillator is "in synch" with the crystal oscillator frequency. Unit 1 includes a crystal oscillator circuit and four cathode followers.

(1) CRYSTAL OSCILLATOR V-2001. — This stage (figure 2-3) is a modified electron-coupled Colpitts oscillator operating at a frequency of 100 kc with

an accuracy of 0.00015 percent. To obtain maximum stability, the quartz crystal is contained in a plug-in unit, Y-2001, which includes a heating element and a thermostat. By this means, the crystal is maintained at a constant temperature of 70°C. (158°F.). When the crystal heater is on, the XTAL HEATER ON indicator light I-2918 on the mounting is energized by 6.3 volts applied from terminal 7 of Y-2001. As indicated on the transmitter group primary power diagram in Section 7, the oven in the crystal oscillator and those in the frequency-shift oscillator and the interpolation oscillator are all fed by a single, independent 110-volt, 60-cps primary power line. Minor tuning adjustments may be made by means of the two slugs of the permeability tuned inductor, L-2001. The bottom slug is factory-adjusted so that the top slug may be adjusted in the field for exactly 100 kc. The total range of the field adjustment is one cycle. L-2002 and C-2013 suppress parasitic oscillations. The output of V-2001, a triangular waveform having a high harmonic content, is coupled through C-2007 to the grid of cathode follower V-2002A.

(2) CATHODE FOLLOWERS V-2002 and V-2003.—The crystal oscillator output (figure 2-4) is distributed to other subunits of the RFO through a system of cathode followers. This prevents loading of the

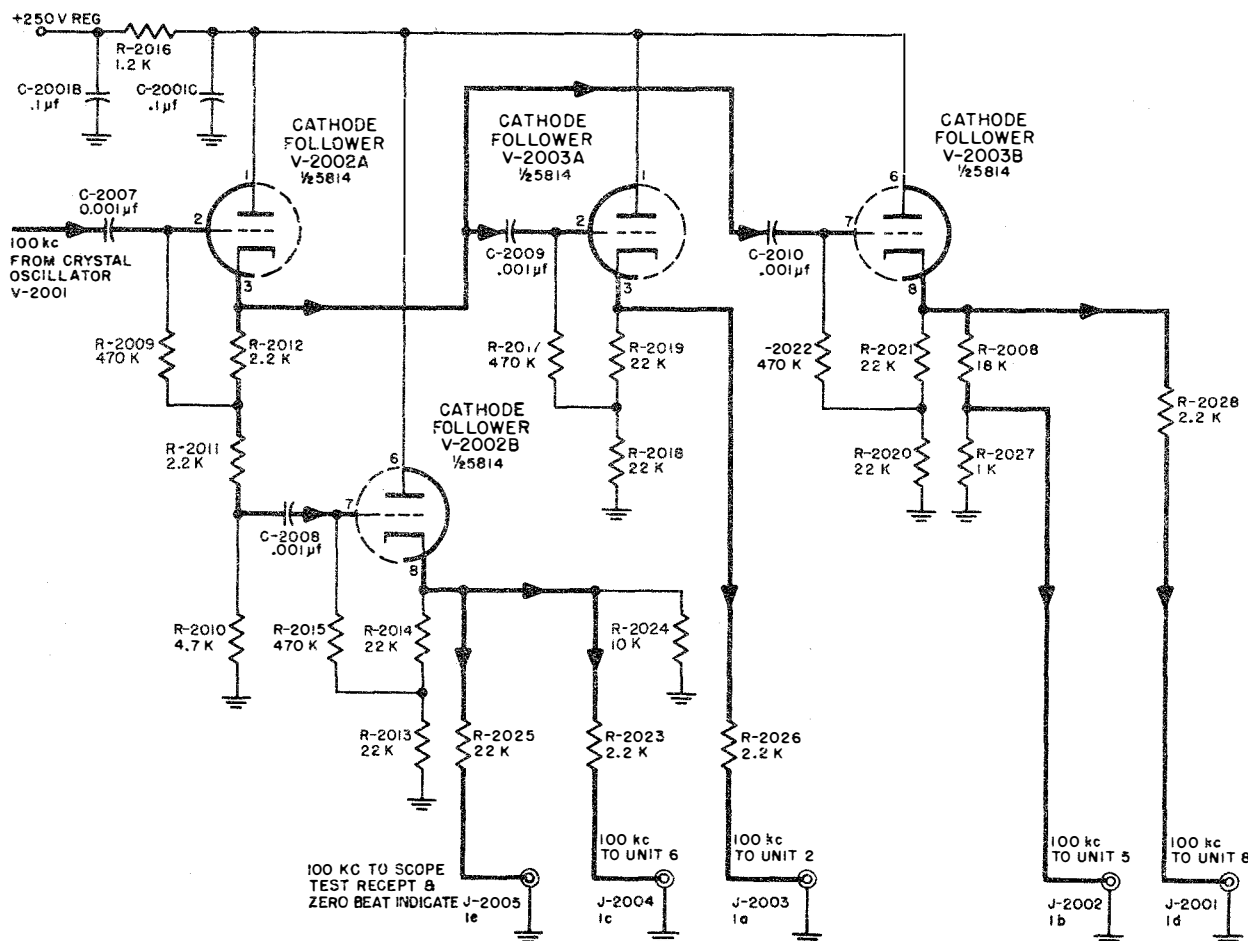


Figure 2-4. RFO Unit 1, Cathode Followers V-2002 and V-2003, Simplified Schematic

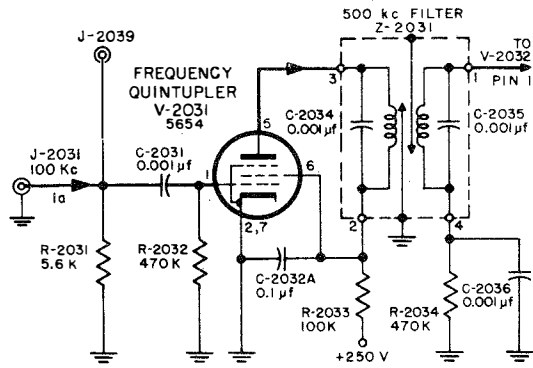


Figure 2-5. RFO Unit 2, Frequency Quintupler V-2031, Simplified Schematic

crystal oscillator and helps maintain its frequency stability. Cathode follower V-2002A receives the crystal oscillator output and distributes it to cathode followers V-2002B, V-2003A, and V-2003B, which, in turn, distribute the output to other subunits of the RFO. Thus, V-2002A serves as a buffer, or isolating, stage, which isolates the crystal oscillator from the output load. The 100-kc output of V-2002B is fed through isolating resistor R-2025 to the oscilloscope test receptacle in unit 14 (output 1e), and through isolating resistor R-2023 to unit 6 (output 1c). The 100-kc output of V-2003A is fed to unit 2 through isolating resistor R-2026 (output 1a). The 100-kc output of V-2003B is fed to voltage divider R-2008 and R-2027 and to unit 8 through isolating resistor R-2028 (output 1d). The portion of this signal that is developed across R-2027 is fed to unit 5 (output 1b). In this case, R-2008 serves as an isolating resistor. The 1-mc signal with which the 100-kc signal is mixed in unit 5 is of relatively low amplitude and is applied to the suppressor grid, whereas the 100-kc signal is applied to the control grid of the mixer. The 100-kc output to unit 5 is therefore reduced in amplitude to match the low amplitude of the 1-mc input to unit 5 and to compensate for the higher amplification of the 100-kc signal resulting from its application to the mixer control grid.

c. FREQUENCY MULTIPLIER Z-2034 (FREQUENCY MULTIPLIER, UNIT 2).—Unit 2 receives the 100-kc crystal-controlled output of unit 1, and, by means of multipliers and harmonic filters, produces a 1-mc signal, which is delivered to units 4, 5, 6, 7, and 10.

(1) FREQUENCY QUINTUPLER V-2031.—The 100-kc output (1a) of unit 1 is applied to the grid of V-2031 (figure 2-5) through J-2031, transmission-line terminating resistor R-2031, and grid-leak network R-2032 and C-2031. Test point J-2038 is provided to test the input (approximately 13 volts). Quintupler V-2031, operated class C, delivers 100 kc and harmonics to filter Z-2031. Frequencies other than the fifth harmonic, 500 kc, are attenuated by Z-2031.

(2) FREQUENCY DOUBLER V-2032.—This stage (figure 2-6), also operated class C, receives the 500-kc output of Z-2031 and delivers 500 kc and harmonics to a 1-mc filter comprising Z-2032 and Z-2033, capacity coupled by C-2038. Frequencies other than the second harmonic, 1 mc, are attenuated by Z-2032 and Z-2033. The output of Z-2033 is impressed across capacitance voltage divider C-2033 and C-2037.

(3) CATHODE FOLLOWERS V-2033 AND V-2034.—These cathode followers (figure 2-7) isolate the multipliers from the units to which the 1-mc output is fed. The 1-mc output of Z-2033 is applied to the cathode followers from the capacitance voltage divider, C-2033 and C-2037. Cathode follower outputs 2b and 2c are fed to mixers, and are therefore reduced by the voltage divider comprising R-2042, R-2036, and R-2037 and the 1K resistors at the inputs to units 5 and 6. Outputs 2a, 2d, and 2e are fed to multipliers and therefore require no reduction in amplitude.

d. FREQUENCY MULTIPLIER Z-2103 (FREQUENCY MULTIPLIER, UNIT 4).—Unit 4 receives the 1-mc output of unit 2, and by means of multipliers and harmonic filters produces an 8-mc signal, which is delivered to unit 5.

(1) FREQUENCY QUADRUPLER V-2101.—The 1-mc output (2a) of unit 2 is applied to the grid of V-2101 (figure 2-8). Test point J-2104 is provided to

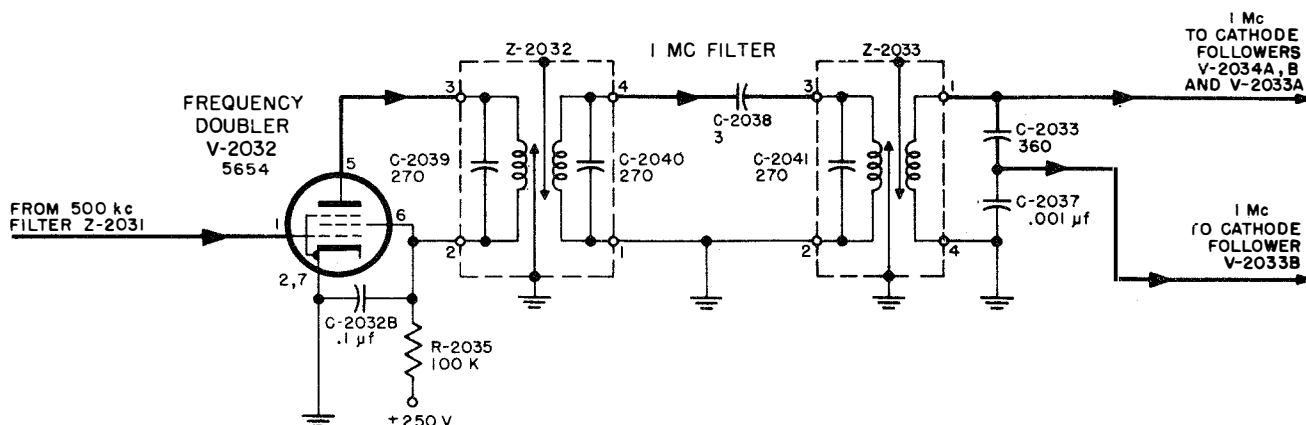


Figure 2-6. RFO Unit 2, Frequency Doubler V-2032, Simplified Schematic

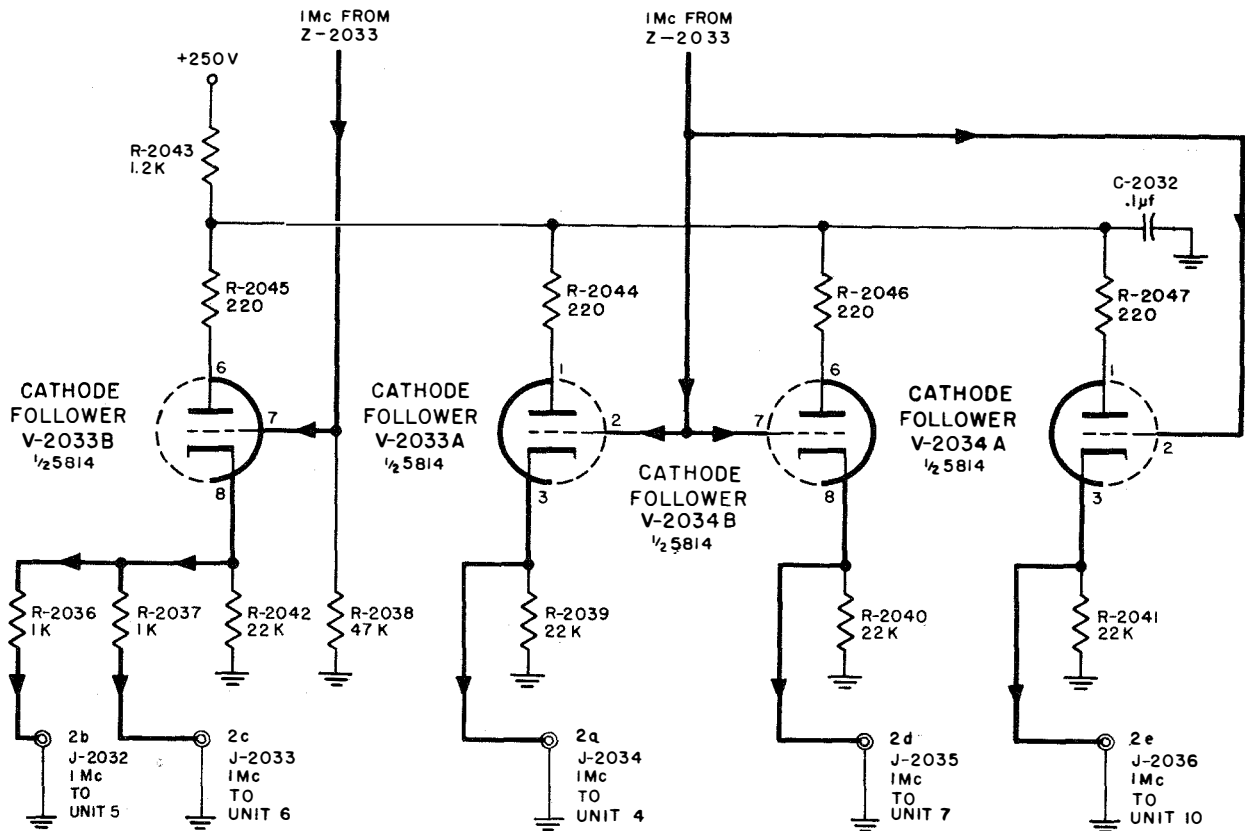


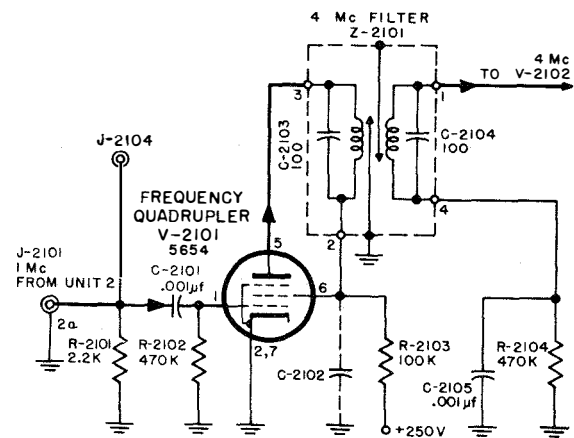
Figure 2-7. RFO Unit 2, Cathode Followers V-2033 and V-2034, Simplified Schematic

test this signal (approximately 8.8 volts) across terminating resistor R-2101. Quadrupler V-2101, operated class C, produces harmonics of 1 mc that are filtered by Z-2101 to attenuate all harmonics but the fourth (4 mc). The 4-mc output of Z-2101 is fed to the grid of doubler V-2102.

(2) FREQUENCY DOUBLER V-2102.—Doubler V-2102 (figure 2-9) receives the output of Z-2101 and delivers 4 mc plus harmonics to the 8-mc filter, Z-2102. This filter attenuates all frequencies other than 8 mc. The final output (4a) is fed to unit 5 after being reduced by capacitance voltage divider C-2108 and C-2109 to a level of approximately 1.2 volts. Test point J-2105 is provided to test output 4a.

e. RADIO FREQUENCY OSCILLATOR Z-2053 (INTERPOLATION OSCILLATOR, UNIT 3).—Unit 3 generates frequencies in the range of 90 to 100 kc, variable in steps of 10, 100, and 1,000 cycles. To obtain maximum stability, the main frequency-controlling elements are kept in an oven at a constant temperature of 70°C. (158°F.). The output frequency is varied by means of decade switches that place inductors and capacitors of the required size in the oscillator main tank circuit.

(1) OSCILLATOR V-2051.—The oscillator is an electron-coupled Hartley circuit (figure 2-10). The main tank circuit comprising C-2060, L-2051A and associated



NOTE: CAPACITORS SHOWN WITH DOTTED LINES ARE BUILT INTO TUBE SOCKETS AND ARE 0.001 μf.

Figure 2-8. RFO Unit 4, Frequency Quadrupler V-2101, Simplified Schematic

elements is located in the oven that is part of Z-2051. Because of variations among coils used for L-2051A, it is necessary to have specially matched trimmer coils L-2051B to make it possible to adjust the resonant frequency of the main tank circuit to 100 kc. L-2051B and the oven assembly constitute Z-2051. The oscillator frequency may be changed by switching additional in-

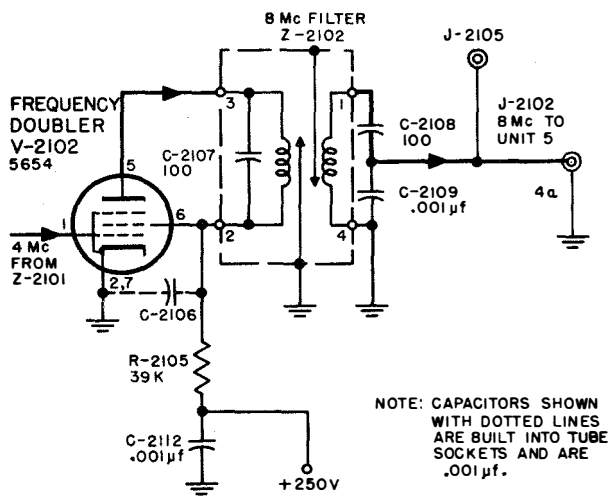


Figure 2-9. RFO Unit 4, Frequency Doubler V-2102, Simplified Schematic

ductors and capacitors in or out of the main tank circuit. This is accomplished by means of three decade switches, S-2051, S-2052, and S-2053, which are operated by controls on the RFO mounting (unit 14). For stability, V-2051 uses a regulated filament supply and a +250-volt regulated plate supply. To reduce interaction with other circuits via the power supply leads, a three-section plate decoupling filter, comprising R-2054, R-2055, and C-2064, is used.

(2) 1-KC STEPS.—Inductor L-2080 or any one of the inductors, L-2052 to L-2060, and any one of the corresponding capacitors, C-2066 and C-2051 to C-2059, may be placed in the main tank circuit by means of switch S-2051 (figure 2-9). In this way, the oscillator frequency may be changed in 1-kc steps. With switch S-2052 in position 9, S-2053 in position 10, and S-2051 in position 9, the main tank inductor, L-2051A, is series-connected to ground through contact 9 of S-2051B, inductors L-2060 through L-2052, inductor L-2080, trimmer L-2051B, contact 9 of S-2052B, and contact 10 of S-2053B. Meanwhile, with S-2051C on contact 9, the main tank capacitor, C-2060, is connected in parallel to C-2066 of the capacitor assembly, Z-2052. Under these conditions, the oscillator frequency is 100 kc. If S-2051 is now placed in position 8, L-2060 is shorted out through contact 8 of S-2051B, thus reducing the inductance in the tank circuit. This would result in a higher oscillator frequency if it were not for the fact that, at the same time, the main tank capacitor, C-2060, is connected in parallel, through S-2051C, to capacitor C-2059, located in capacitor assembly Z-2052. The value of C-2059 is so high that it more than compensates for the above-mentioned decrease in inductance. As a result of the increase in capacitance, the oscillator frequency is lowered to 99 kc. When S-2051 is placed in position 7, L-2060 and L-2059 are shorted out, but C-2060 is connected to an even higher capacitance than formerly, which more than compensates for the decrease in inductance, resulting in a still lower frequency, 98 kc. This process is repeated each time switch S-2051 is

placed in a lower position, resulting in 1-kilocycle step decreases of the oscillator frequency until 91 kc is reached. This occurs when S-2051 is in position 0. At this time, all of the inductors, L-2052 through L-2060, are shorted out, and the tank inductor, L-2051A, is series-connected to ground through L-2080 and trimmer L-2051B. L-2080 is the mounting front panel INT. OSC. ZERO ADJ. control. It permits adjustment of the oscillator output when this output is compared on the ZERO BEAT INDICATOR electron ray tube with the crystal-controlled output of unit 1.

(3) 100-CYCLE STEPS.—The oscillator output may be changed in steps of 100 cycles by means of switch S-2052. With this switch in position 9, and S-2053 in position 10, the output of the 1-kc step switch, S-2051, is grounded through contact 9 of S-2052B and contact 10 of S-2053B. Under these conditions, the 100-cycle step switch has no effect on the oscillator frequency. However, when S-2052 is placed in position 8, all the inductors, L-2061 to L-2068, inclusive, are shorted out, and the signal from the 1-kc step switch is fed through L-2069 to ground. The additional inductance introduced by L-2069 decreases the oscillator frequency by 100 cycles. Similarly, when S-2052 is placed in position 7, another inductor, L-2068, is placed in the circuit, and the oscillator output is decreased by another 100 cycles. This process may be continued until S-2052 is placed in position 0 (with S-2053 still in position 10), and a total decrease of 900 cycles is obtained in the oscillator frequency. Thus, S-2052 makes available frequency changes up to 900 cycles, in 100-cycle steps. This range of frequency changes may be increased by 100 cycles by means of 10-cycle step switch S-2053.

(4) 10-CYCLE STEPS.—Similarly, when the 10-cycle step switch S-2053 is in position 9, L-2079 is added to the tank circuit. The additional inductance introduced by L-2079 decreases the oscillator frequency by 10 cycles. This process may be continued until S-2053 is in position 0. When this position is reached, S-2053 will have made available oscillator frequency changes up to 100 cycles, in 10-cycle steps.

(5) FREQUENCY SELECTION.—Suppose that it is desired to tune the oscillator to 94.28 kc with the 1-kc and 100-cycle step switches initially set at position 9 and the 10-cycle step switch set at position 10. As seen in paragraph 2e(2), this produces an output of 100 kc. The 1-kc step switch is placed in position 4, which reduces the oscillator output by 5 kc to 95 kc. The 100-cycle step switch is set to position 2, reducing the oscillator output by 700 cycles to 94.30 kc. Finally, the 10-cycle step switch is set to position 8, reducing the oscillator output by 20 cycles to the desired frequency of 94.28 kc. It can be seen that the output frequency of the oscillator will be 90 kc plus the values according to the position setting of the 1-kc, 100-cycle, and 10-cycle step switches respectively. The 1-kc step switch is controlled by the KC control knob (C), the 100-cycle step switch by the 100~ control knob (D), and the 10-cycle step switch by the 10~ control knob (E). All three of these controls are located on the RFO front panel.

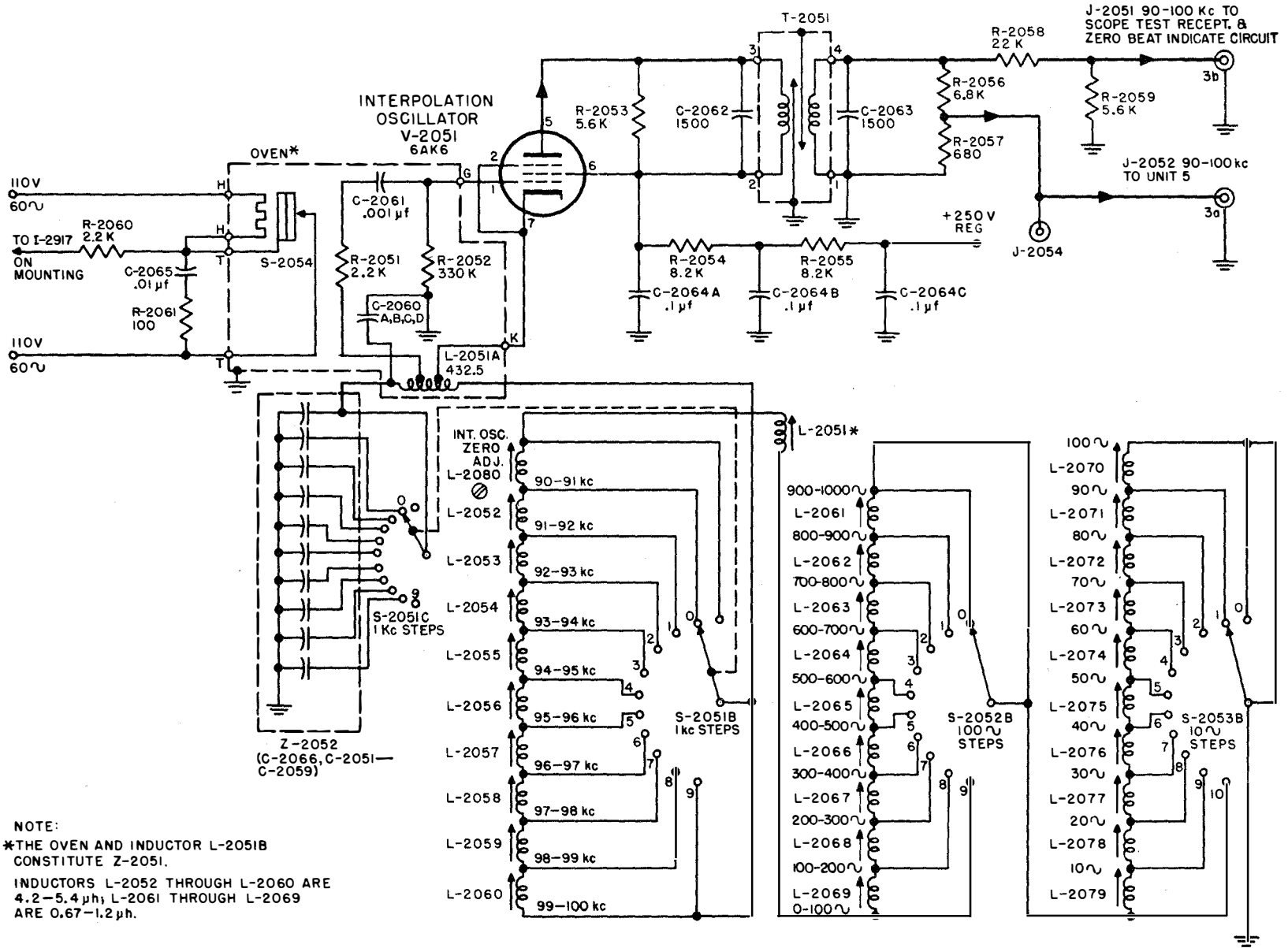


Figure 2-10. RFO Unit 3, Interpolation Oscillator V-2051, Simplified Schematic

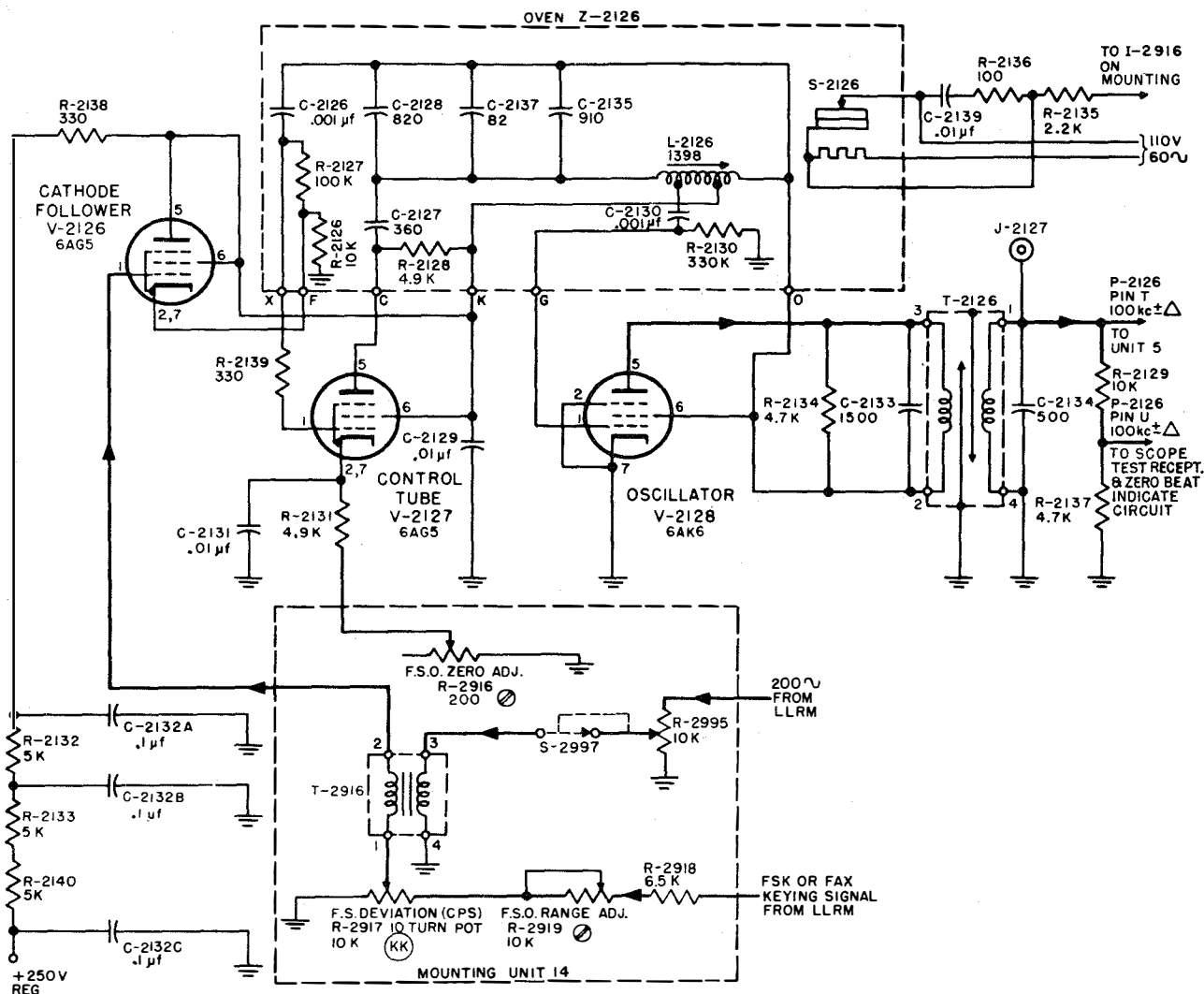


Figure 2-11. RFO Unit 12, Frequency Shift Oscillator, Simplified Schematic

(6) OUTPUT CIRCUIT.—Oscillator V-2051 is provided with a tuned output circuit comprising the tunable transformer, T-2051, and capacitors C-2062 and C-2063. Resistors R-2058, R-2059 and R-2056, R2057 are voltage dividers from which the two 90- to 100-kc outputs are tapped. These resistors widen the band pass by loading the output tank circuit. Output 3b, taken from the junction of R-2058 and R-2059, is fed to the oscilloscope test receptacle for use as an aid in servicing. Output 3a, taken from the junction of R-2056 and R-2057, is fed to unit 5. Test point J-2054 is provided for testing output 3a whose amplitude is approximately 0.3 volt.

(7) HEATER CIRCUIT.—The oven heater circuit includes thermostat S-2054 and the heater element located inside the oven, and R-2060, R-2061 and C-2065 located outside the oven. R-2061 and C-2065 constitute a spark-suppressor circuit. When the heater is on, the INT.-HEATER ON indicator light, I-2917, on the mounting front panel is energized via dropping resistor R-2060.

f. RADIO FREQUENCY OSCILLATOR Z-2127 (FREQUENCY SHIFT OSCILLATOR, UNIT 12).—This unit (figure 2-11) makes possible frequency-shift keying and facsimile operation of the transmitter. It includes a 100-kc oscillator that is capable of shifting its frequency $\pm 1,000$ cps from 100 kc at a 240-cps rate (corresponding to teletype at 600 words a minute) during FSK operation, or up to 2,000 cps, as determined by the amplitude of the photo input voltage, during facsimile operation.

(1) OSCILLATOR V-2128.—This stage is an electron-coupled 100-kc Hartley oscillator. To obtain stability, the frequency controlling tank circuit, comprising capacitors C-2128, C-2137, C-2135, tunable inductor L-2126, and associated elements, is located in an oven maintained at 70°C. (158°F.). Plug-in inductor L-2126 is a coarse frequency control. The tuned output tank, comprising T-2126, C-2133 and C-2134, filters the output and isolates the oscillator from the RFO subunits to which the oscillator output is connected. Load resistor R-2134 increases the band pass of the output tank.

(2) CONTROL TUBE V-2127.—The control tube circuit is essentially a part of the oscillator circuit. A portion of the oscillator output is coupled to the control grid of V-2127 by C-2126. This is equivalent to changing a reactive component in the tank, and will change the oscillator frequency. The frequency, however, may be adjusted to 100 kc (in the absence of frequency-shift or facsimile keying signals) by means of the coarse control, L-2126, and the fine control, F.S.O. ZERO ADJ., R-2916, which is located on the control panel and sets the cathode bias of the control tube. If the control tube grid voltage is now made more positive, the control tube delivers a larger reactive current to the tank, and the oscillator frequency increases. If the grid voltage is made less positive, the oscillator frequency decreases.

(3) CATHODE FOLLOWER V-2126.—The control tube grid circuit is connected to the output of cathode follower V-2126 via isolating resistor R-2127. By this means the oscillator frequency may be made to vary in accordance with the voltage variations at the cathode follower grid. The grid is returned to ground through the secondary winding of T-2916, and a portion of potentiometer R-2917. All these components through which the grid is grounded are located on the mounting front panel. The F.S. DEVIATION control $\text{\textcircled{K}}$, R-2917, is calibrated directly in cycles per second deviation from the nominal carrier frequency. For FSK operation, control $\text{\textcircled{K}}$ may be set to provide an oscillator frequency deviation $\left(\frac{\Delta f}{2}\right)$ up to ± 500 cycles from the signal from V-1019 in the LLRM. The equipment FSK keying requirements specify a deviation adjustable to any value between zero and 500 cycles (minimum) on each side of

the carrier for mark-and-space telegraph signals. Thus a 1,000-cps space-to-mark frequency shift, corresponding to a 500-cycle deviation on either side of the carrier, is provided when control $\text{\textcircled{K}}$ R-2917 is set to its midposition (500). For facsimile transmission the equipment is required to have a total frequency shift (Δf) adjustable to any value between 500 and 2,000 cycles for a facsimile set output keying voltage of +20 volts dc in normal operation. This maximum shift is obtained by setting the RFO front panel controls to a frequency that is $\frac{\Delta f}{2}$ below the desired carrier frequency and adjusting the F.S. DEVIATION control $\text{\textcircled{K}}$ until its dial reads 1/2 of the desired total shift $\left(\frac{\Delta f}{2}\right)$. For example, if a 2,000-cycle shift is desired for the maximum signal from the facsimile set, the RFO output frequency should be adjusted to be 1,000 cycles lower than the nominal carrier frequency and control $\text{\textcircled{K}}$ should be adjusted to read 1000.

The F.S.O. RANGE ADJ. control, R-2919, may be set to make the deviation dial read correctly. Frequency-shift keying signals from V-1019 in the LLRM are applied to the cathode follower grid through R-2919, R-2917, and the secondary of T-2916. These signals, which are rectangular voltage pulses, may be phase-modulated by a 200-cycle signal (from V-1020 in the LLRM), which is applied across the T-2916 primary. The modulated keying pulses, impressed on the cathode follower grid, vary the reactive current in the control tube by varying its bias, and hence frequency-modulate the oscillator in accordance with the amplitude of the keying pulses at the grid of the cathode follower. The

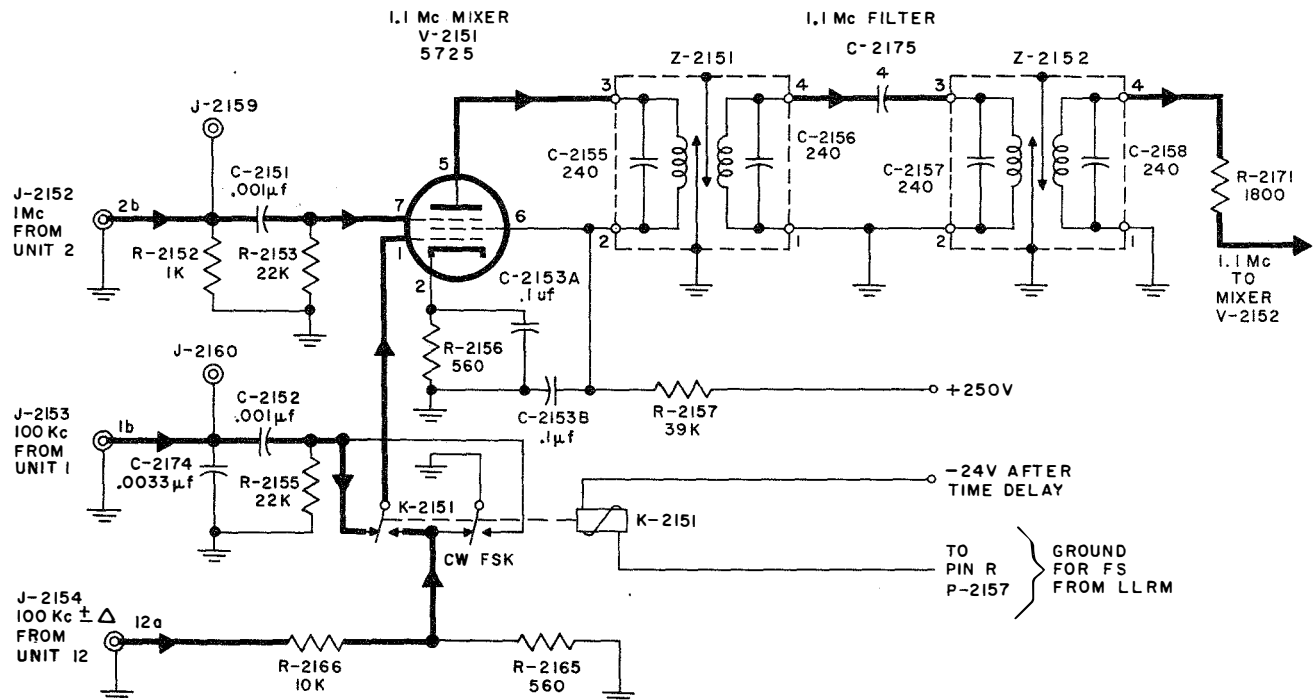


Figure 2-12. RFO Unit 5, 1.1-Mc Mixer V-2151, Simplified Schematic

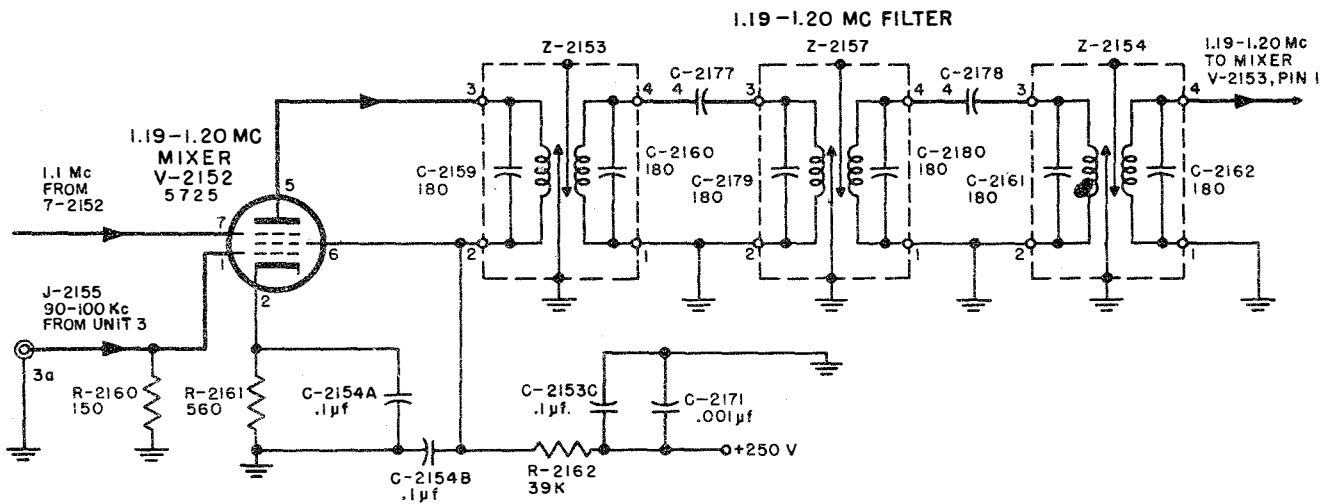


Figure 2-13. RFO Unit 5, 1.19- to 1.2-Mc Mixer V-2152, Simplified Schematic

phase-modulating signal varies the carrier phase ± 1 radian from the nominal position at a fixed 200-cps rate. It is provided to minimize selective fading effects. The cathode follower isolates the oscillator circuit, and T-2916 isolates the cathode follower from the 200-cycle source in the LLRM.

(4) MISCELLANEOUS.—The heater is provided with a thermostat, S-2126. R-2136 and C-2139 constitute a spark suppressor circuit. R-2135 is a dropping resistor for the F.S. HEATER ON indicator light, I-2916, located on the mounting front panel. To obtain frequency stability and reduce interaction with other circuits via the power supply, a +250-volt regulated supply and a three-section plate decoupling capacitor, C-2132, are used. V-2126, V-2127, and V-2128 also use a regulated filament supply.

The output of unit 12 ($100 \text{ kc} \pm \frac{\Delta f}{2}$ where $\frac{\Delta f}{2}$ represents frequency deviation) is fed to unit 5 and to the oscilloscope test receptacle in unit 14. Test point J-2127 is provided to test the output (approximately 12.3 volts). The presence of the control tube across the oscillator tank circuit makes the oscillator less stable; therefore, during c-w and phone operation, the crystal oscillator (unit 1) is used as the master frequency source in place of unit 12.

g. ELECTRONIC FREQUENCY CONVERTER Z-2158 (FREQUENCY CONVERTER, UNIT 5).—Unit 5 receives five frequencies from other subunits of the RFO, four of which are used at any given time, and mixes them to produce an output in the range of 9.19 to 9.2 mc, in 10-cycle steps, which is delivered to unit 6. The frequencies received are 1 mc from unit 2, 100 kc from unit 1, $100 \text{ kc} \pm \Delta$ from unit 12, 90 to 100 kc from unit 3, and 8 mc from unit 4. The 100-kc signal from unit 1 is used during c-w and phone operation only. During FSK and facsimile operation the $100\text{-kc} \pm \Delta$ signal from unit 12 is used instead of the signal

from unit 1. See paragraph 2f for a complete discussion of the output frequencies from unit 12 during FSK and facsimile operation.

(1) 1.1-MC MIXER V-2151.—Whenever SERVICE SELECTOR switch \textcircled{U} in the LLRM is in FSK or FAX position, relay K-2151 is energized from -25 volts after time delay to the "ground for F.S." line supplied from the LLRM (paragraph 7c(8)) and input 12a ($100 \text{ kc} \pm \Delta$) from unit 12 is applied to the control grid of mixer V-2151 (figure 2-12) through R-2166 and the contacts of K-2151. With SERVICE SELECTOR switch \textcircled{U} in any other position, relay K-2151 is de-energized, and, as a result, input 12a is grounded through R-2166 and input 1b (100 kc from unit 1) is applied to the mixer control grid. The 1-mc input from unit 2 (2b) is applied to the mixer suppressor grid. The mixer output is filtered by Z-2151 and Z-2152. The resulting 1.1-mc signal is applied to the suppressor grid of the second mixer, V-2152.

(2) 1.19- TO 1.2-MC MIXER V-2152.—A 90- to 100-kc signal (3a) is applied to the control grid of the second mixer, V-2152 (figure 2-13). The mixer output is filtered by the sextuple-tuned filter combination, Z-2153, Z-2157, and Z-2154, whose output (1.19 to 1.2 mc) is applied to the control grid of the third mixer, V-2153.

(3) 9.19- TO 9.2-MC MIXER V-2153 AND AMPLIFIER V-2154.—An 8-mc signal (4a) from unit 4 is applied to the suppressor grid of mixer V-2153 (figure 2-14). The 9.19- to 9.2-mc output is filtered by Z-2155, amplified by V-2154, filtered again by Z-2156, reduced in amplitude by voltage divider C-2170 and C-2169, and fed to the output receptacle, J-2156, from which it is transmitted to unit 6. Test points J-2158, J-2159, and J-2160 are provided for testing inputs 4a (approximately 1.2 volts), 2b (approximately 1.2 volts) and 1b (approximately 0.36 volt), respectively. Test point J-2161 is provided for testing the output 5a (approximately 1.3 volts) of unit 5.

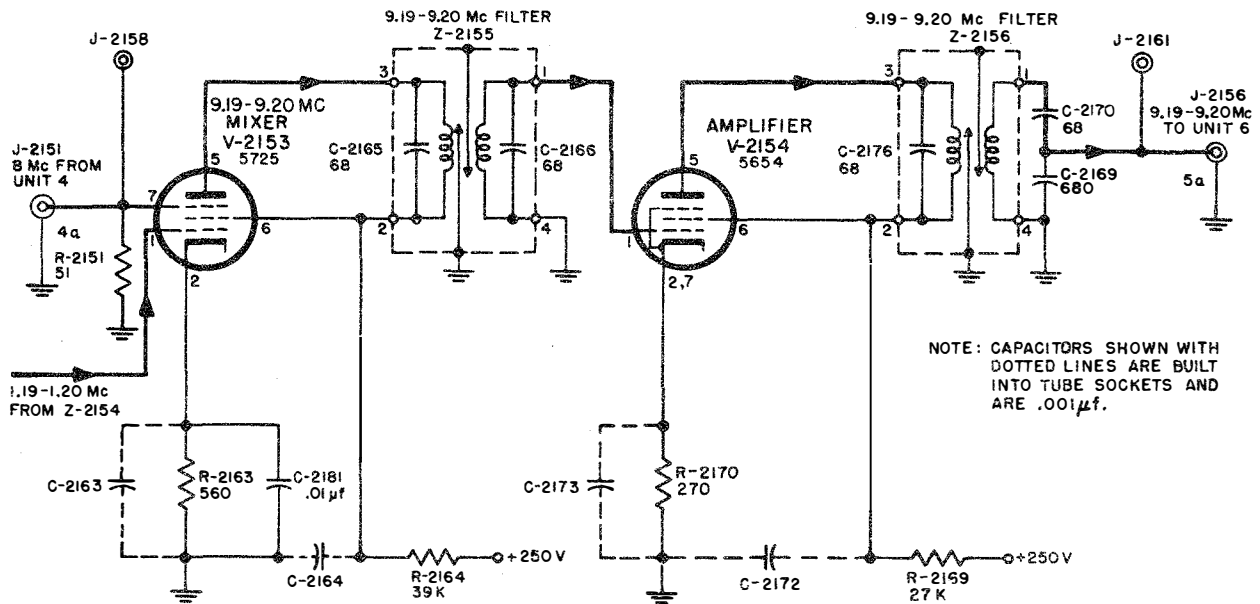


Figure 2-14. RFO Unit 5, 9.19- to 9.2-Mc Mixer V-2153 and Amplifier V-2154, Simplified Schematic

b. ELECTRONIC FREQUENCY CONVERTER Z-2204 (10-KC STEP GENERATOR, UNIT 6).—Unit 6 (figure 2-15) produces and feeds to unit 8 an output of 10.4 to 10.5 mc, variable in steps of 10 cps. In addition, it generates and feeds to the oscilloscope test receptacles a 10-kc output and an output of 210 to 300 kc, variable in steps of 10 kc. The unit contains a 10-kc step phase-locked oscillator comprising mixer V-2203, reactance tube V-2204, and oscillator V-2205. The output from these units is synchronized by the 100-kc output from the crystal oscillator (unit 1). To insure the stability of the generated frequencies, the three tubes of the phase-locked oscillator and V-2202, the blocking oscillator and shaper, use a regulated filament supply. The output of oscillator V-2205 (210 to 300 kc) is mixed with a 1-mc signal from unit 2 by mixer V-2206. The sum, 1.21 to 1.3 mc, is fed to mixer V-2207 and mixed with a 9.19- to 9.2-mc signal from unit 5. The sum, 10.4 to 10.5 mc, is fed to amplifiers V-2208 and V-2209 and then delivered to unit 8.

(1) ISOLATING AMPLIFIER V-2201.—The 100-kc signal (1c) from unit 1 is coupled by C-2201 to the grid of isolating amplifier V-2201 (figure 2-16). Test point J-2208 is provided for testing input 1c (approximately 7.4 volts). Amplifier V-2201 isolates blocking oscillator V-2202A from the crystal oscillator in unit 1, and provides sufficient output voltage to synchronize the blocking oscillator to exactly 1/10 of the crystal frequency.

(2) BLOCKING OSCILLATOR V-2202A AND SHAPER V-2202B. — When blocking oscillator V-2202A (figure 2-16) begins to conduct, plate current begins to flow through the plate winding of T-2201. This induces a positive voltage on the grid through transformer T-2201 and C-2204, and, as a result, the plate current increases further, inducing a larger positive

voltage on the grid, etc. This cumulative action occurs very rapidly and continues until the tube is driven to saturation. At this point further increases in grid voltage do not affect the plate current. When there is no further change in plate current, there is no further induced positive voltage on the grid. This decreases plate current, thereby inducing a negative voltage on the grid through T-2201, thus decreasing the plate current still further. This cumulative action occurs very rapidly, driving the grid far below the cutoff point. Then, as C-2204 discharges to ground potential through R-2207, the grid voltage becomes less negative and, in free-running operation, returns to just above the cutoff point. Plate current begins to flow again, and the cycle repeats itself. The grid recovery time is determined by the R-C time constant on the charging network, C-2204 and R-2207.

The grid recovery time and the cutoff point are so chosen that only every tenth cycle from the isolating amplifier will arrive at the blocking oscillator plate at a time when the grid is sufficiently near the cutoff point to be raised above cutoff by the impressed signal. As a result, the blocking oscillator frequency is synchronized to exactly 1/10 of the isolating amplifier output frequency, or 1/10 of the crystal oscillator frequency. The blocking oscillator must be set at 10 kc or slightly lower for it to become synchronized at a 10-kc rate. If it is set slightly higher than 10 kc (that is, if the grid recovery time is decreased) the 100-kc pulse will come too late and the oscillator will have operated prematurely. The free-running frequency of the blocking oscillator may be varied by R-2210, by means of which the cutoff point may be raised or lowered.

The blocking oscillator synchronizes step oscillator V-2205. To obtain more stable control of the step oscillator, the wide pulses from the blocking oscillator

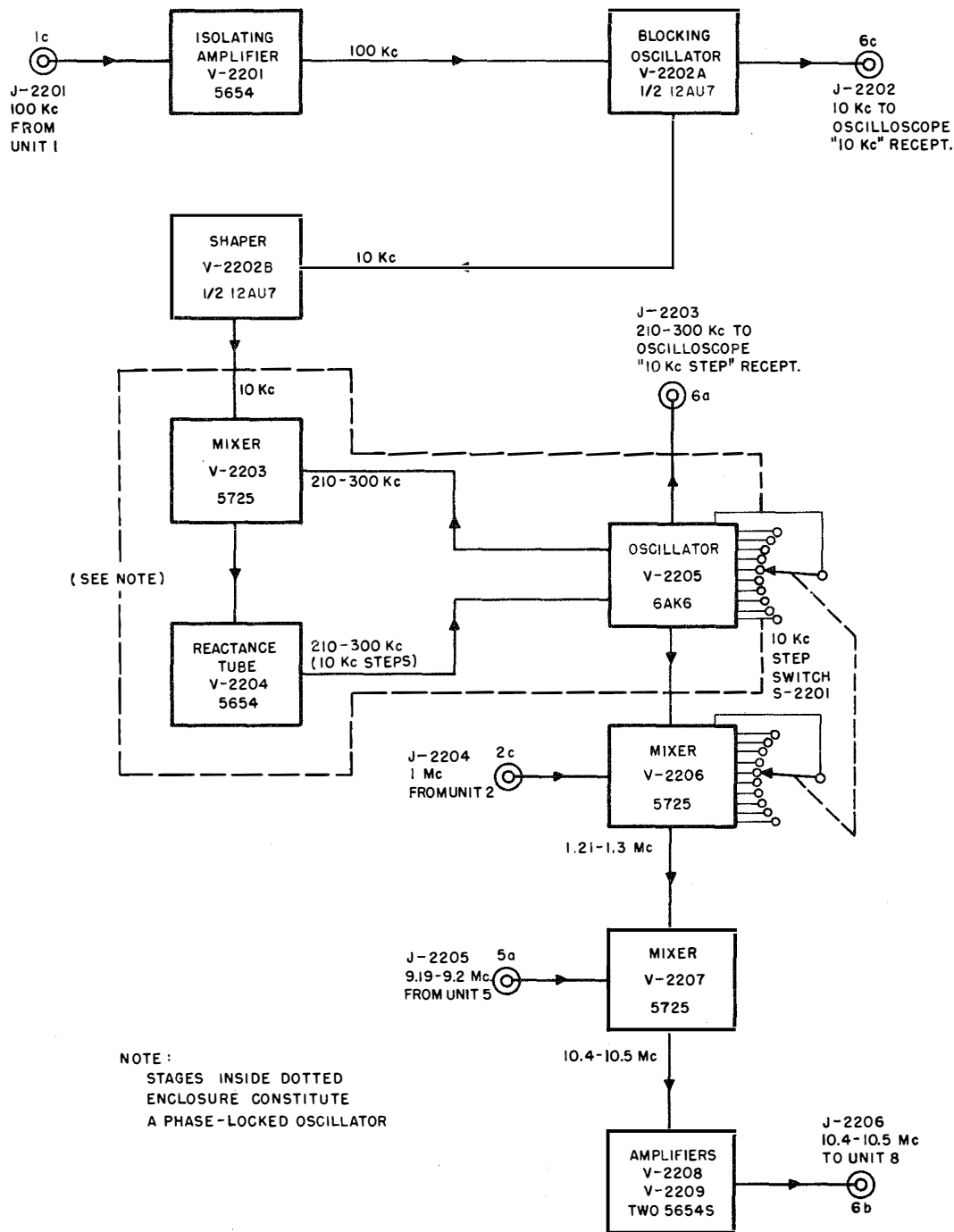


Figure 2-15. RFO Unit 6, Electronic Frequency Converter (10-Kc Step Generator), Block Diagram

are delivered through the peaking network, C-2290 and R-2211, and are narrowed to approximately 1 microsecond (5 volts amplitude) by a shaping circuit consisting of V-2202B and the damped-tuned circuit, T-2202 and CR-2201. Crystal CR-2201 allows only positive output to appear at the shaper. The shaper output is applied from the secondary of T-2202 to the control grid of mixer V-2203. A portion of the blocking oscillator output (6c) is coupled through J-2202 to the 10-kc oscilloscope test receptacle in the mounting.

(3) STEP OSCILLATOR V-2205, MIXER V-2203 AND REACTANCE TUBE V-2204.—Step oscillator V-2205 generates frequencies in the range of 210 to 300 kc, in steps of 10 kc (figure 2-17). The oscillator is locked in to the synchronized 10-kc blocking oscillator, V-2202A, by means of mixer V-2203, a filter network, and reactance tube V-2204. The reactance tube corrects the oscillator if it drifts from the frequency to which it was tuned.

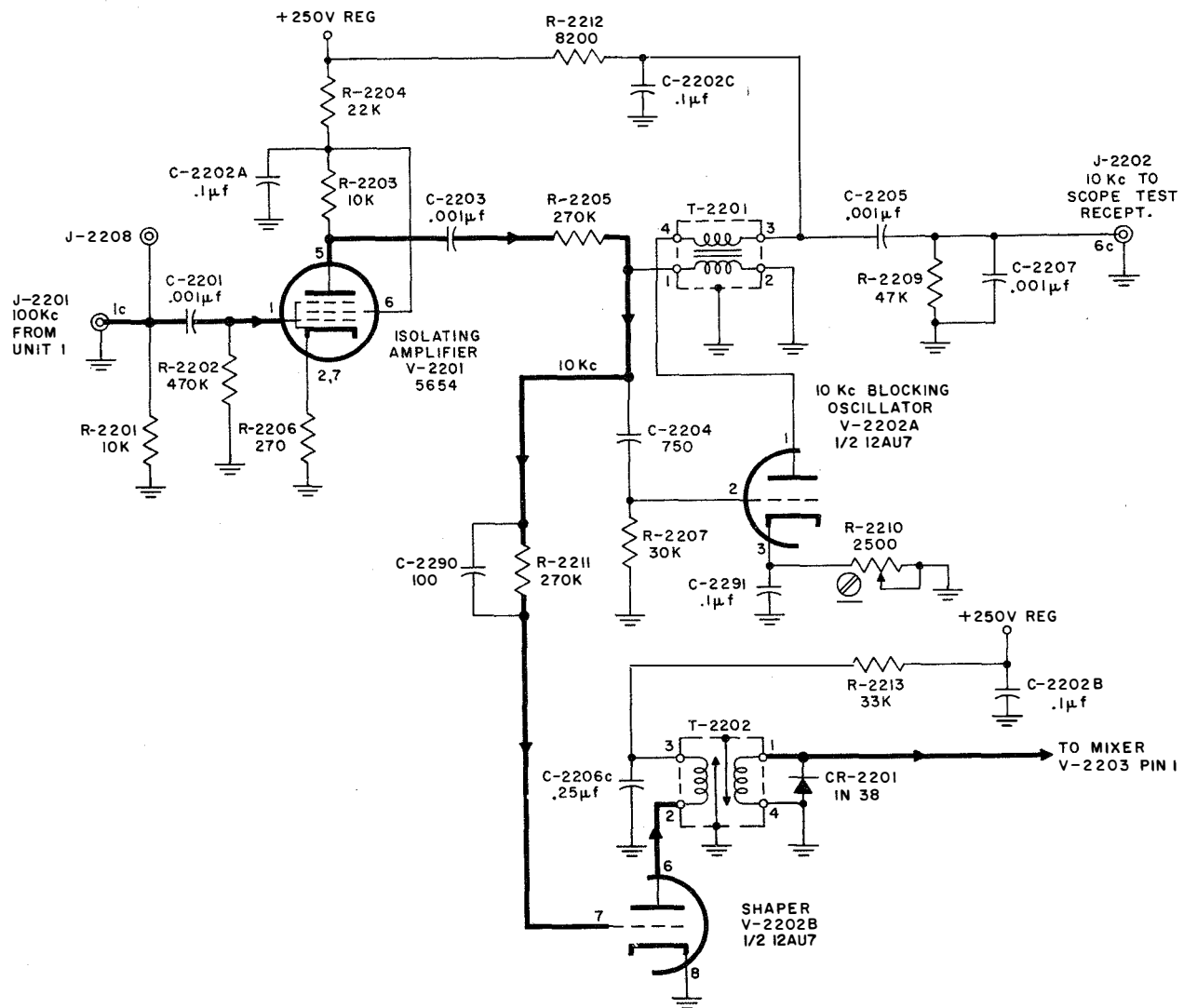


Figure 2-16. RFO Unit 6, Isolating Amplifier V-2201, Shaper V-2202B and 10-Kc Blocking Oscillator V-2202A, Simplified Schematic

(a) The 10-kc step oscillator is a modified Colpitts oscillator (figure 2-17). The tank circuit consists of Z-2201, C-2220, C-2287, and one or more of the inductors, L-2204 to L-2212, inclusive, selected according to the final output frequency desired for unit 6. Inductors L-2204 through L-2212 are wired to contacts of section D of the 10-kc decade step switch S-2201, which is, in turn, controlled by the 10 KC control knob (D), one of the frequency control knobs. When S-2201 (10 KC) is in position 0, all the inductors, L-2204 through L-2212, are included in the tank circuit, and the lowest oscillator frequency, 210 kc, is obtained. When S-2201 is in position 1, L-2204 is shorted. This reduces the inductance in the tank circuit and increases the oscillator frequency to 220 kc. When switch S-2201 is in position 2, both L-2204 and L-2205 are shorted, reducing the inductance in the tank circuit still further and consequently increasing the oscillator frequency to 230 kc. Thus the oscillator frequency may be increased in steps of 10 kc until

(in position 9) inductors L-2204 to L-2212, inclusive, are all shorted. With only Z-2201 remaining in the tank circuit, the oscillator frequency is 300 kc. The oscillator frequency is thus adjustable from 210 to 300 kc, in 10-kc steps. The oscillator frequency may be adjusted to 300 kc by means of adjustable trimmer capacitor C-2219. Output 6a (210-300 kc) is fed to the 10-kc step oscilloscope test receptacle in unit 14.

(b) A portion of the 210- to 300-kc output is coupled by C-2216 to the suppressor grid of mixer V-2203. The 10-kc output of shaper V-2202B, rich in harmonics and synchronized with the 100-kc oscillator in unit 1, is applied to the mixer control grid. The mixer output contains d-c and a-c components. If the oscillator frequency is an exact multiple of 10 kc, the components consist of 10 kc and its harmonics in addition to the oscillator frequency (210 to 300 kc). The composite a-c signal is prevented from reaching the reactance tube, V-2204, control grid by a shunting capacitor, C-2208, a

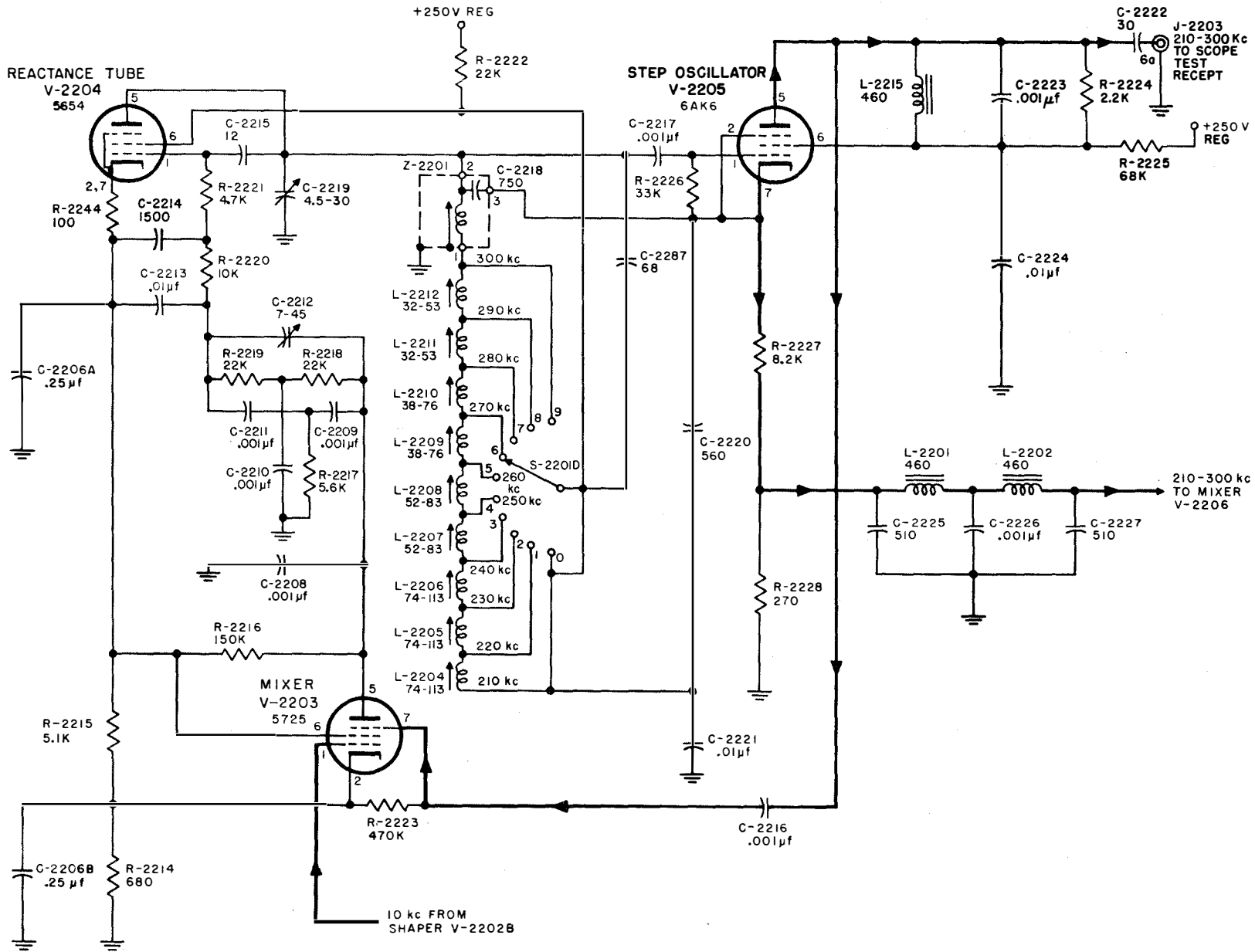


Figure 2-17. RFO Unit 6, Mixer V-2203, Step Oscillator V-2205, and Reactance Tube V-2204, Simplified Schematic

bridged-T 10-kc rejection filter (R-2217, C-2209, C-2211, C-2212, R-2218, R-2219, and C-2210) and a low-pass R-C filter (C-2213, R-2220, and C-2214). The bridged-T filter is used to insure that the strong 10-kc signal is adequately attenuated. The d-c component is a function of the tube operating point, the amplitude of the 10-kc and oscillator (210 to 300 kc) signals, and the phase relationship of the oscillator frequency to the 10-kc signal harmonic. Stabilized power supplies minimize changes due to the first two variables; only the phase relationship is important in determining the d-c component of the mixer output.

Resistor R-2216 is the plate load for V-2203. To provide direct coupling, the mixer plate and screen voltages are obtained from the reactance tube cathode current flow through R-2215. The d-c output of the mixer is applied to the control grid of the reactance tube, V-2204, where it determines the reactance tube mutual conductance operating point, and hence the magnitude of the reactance controlled by V-2204 in the oscillator circuit. The relative phase of the 10-kc and oscillator frequency voltages shift until the required reactance is con-

tributed by V-2204 to maintain the desired frequency. If the oscillator frequency tends to increase, the phase displacement causes a change in the mixer d-c output which will increase the magnitude of the capacitive reactance contributed by V-2204 and hence tend to decrease the oscillator frequency. By this means the step oscillator, V-2205, is locked to the 10 kc.

(c) If the oscillator has not been locked in to 10 kc, the oscillator frequency will probably not be an exact multiple of 10 kc. In this case, the mixer output will contain, in addition to the d-c and a-c signals previously mentioned, the difference frequency between the oscillator output and the nearest harmonic of 10 kc. If this difference frequency is less than approximately 1.5 kc, it will pass through the 10-kc and low-pass filters and appear at the grid of the reactance tube. Frequencies above 1.5 kc will be reduced in amplitude by the low-pass filter and will have no effect. An a-c grid voltage, because of the difference frequency, is now superimposed symmetrically upon the d-c grid voltage, which established the locked-in frequency of the oscillator. This changes the reactive component of current de-

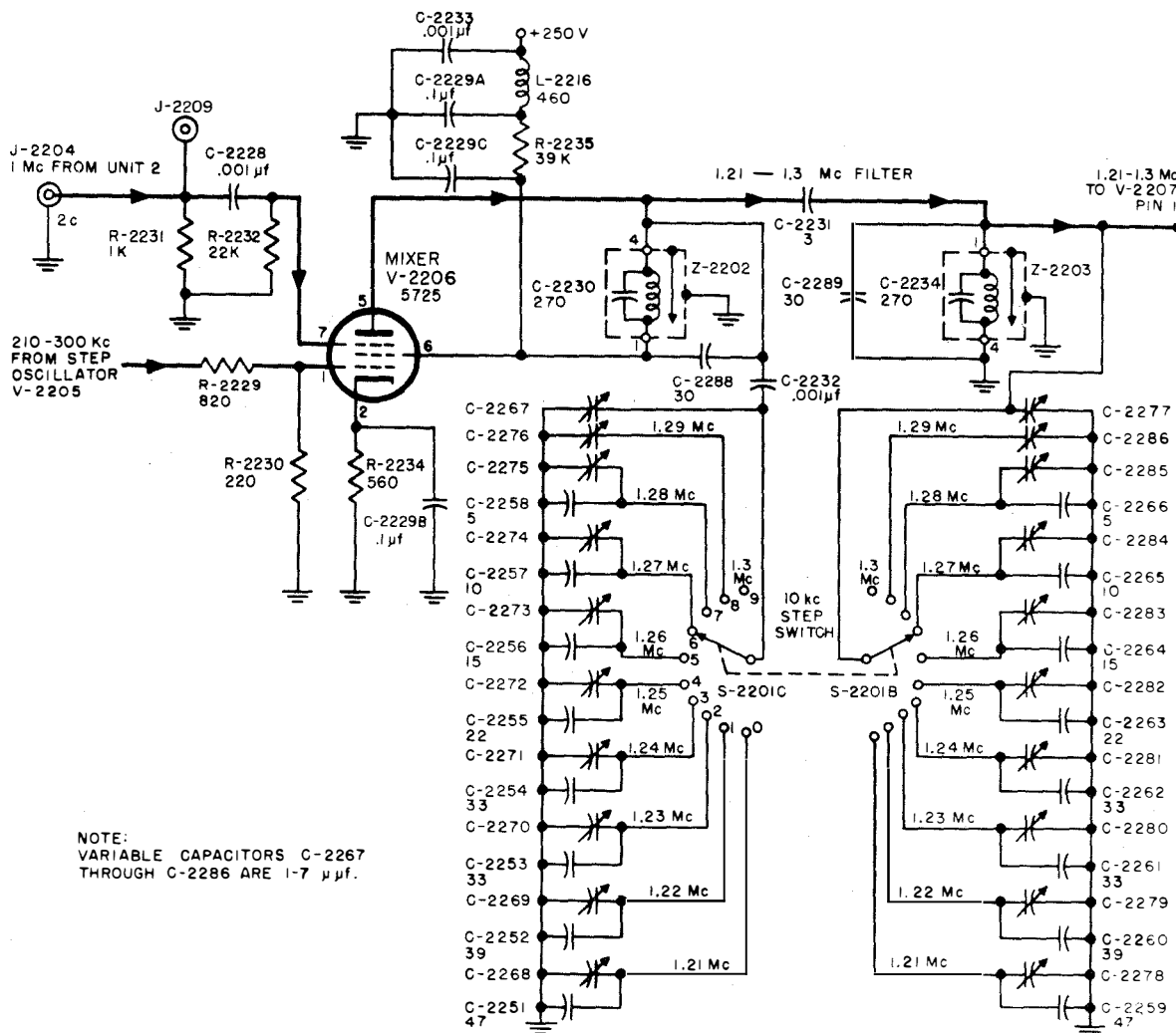


Figure 2-18. RFO Unit 6, Mixer V-2206, Simplified Schematic

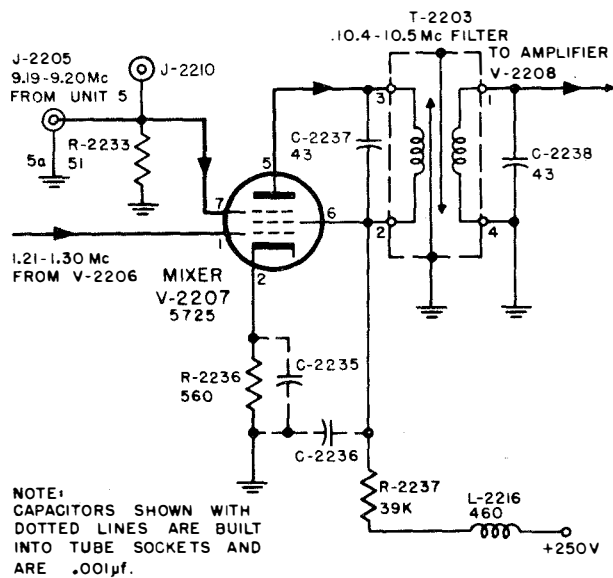


Figure 2-19. RFO Unit 6, Mixer V-2207, Simplified Schematic

livered by reactance tube V-2204 (which is connected across the tank circuit) in accordance with the a-c voltage caused by the difference frequency. As a result, the tank reactance is varied in the same manner, and the oscillator is frequency-modulated. The oscillator output is swept through a band of frequencies that include the locked-in frequency. As the locked-in frequency is approached, the difference frequency becomes smaller. When the locked-in frequency is reached, there is no longer a difference frequency. As a result, no a-c voltage is now superimposed on the original d-c grid voltage of the reactance tube. The oscillator is now restored to the original locked-in frequency that had been established by the original d-c grid voltage of the reactance tube. If, for example, it is desired to lock in the oscillator at 300 kc, switch S-2201 is placed in position 9 and the oscillator is adjusted to 300 kc (three times the crystal oscillator frequency) by means of capacitor C-2219.

The oscillator output is coupled to the 1.21- to 1.3-mc mixer V-2206 by the low-pass filter network L-2201, L-2202, C-2225, C-2226, and C-2227.

(4) 1.21- TO 1.3-MC MIXER V-2206.—This mixer (figure 2-18) receives two signals: the oscillator output (210 to 300 kc), which is applied to the control grid, and the 1-mc output (2c) from unit 2, which is applied to the suppressor grid. The oscillator output signal amplitude is reduced by the voltage divider, R-2229 and R-2230. The 1-mc signal is received through J-2204, load resistor R-2231, coupling capacitor C-2228, and resistor R-2232. Test point J-2209 is provided for testing output 2c (approximately 1.2 volts). Mixer V-2206 combines 1 megacycle with the oscillator output to produce frequencies in the range of 1.21 to 1.3 mc. The mixer is provided with a double-tuned output filter, consisting of Z-2202, C-2288, C-2267, Z-2203, C-2289, C-2277, and the capacitors switched in and out

by sections C and B of 10-kc step switch S-2201, all of whose sections are ganged. Note that S-2201 is the same step switch that selects an oscillator frequency of 210 to 300 kc.

When step switch S-2201 is in position 1, capacitors C-2269, C-2252, C-2279, and C-2260 are used in the filter. Consequently, the filter is tuned to 1.22 mc (and the oscillator is tuned simultaneously to 220 kc). As the switch position step numbers are increased, the capacitance in the filter is decreased by an amount sufficient to increase the resonant frequency of the filter by 10 kc for each step. In switch position 9, the filter is tuned to 1.3 mc. This method of filtering permits the use of high-Q, sharply tuned circuits, which reject spurious frequencies. Capacitors C-2288 and C-2289 are ceramic capacitors used for temperature compensation. Variable capacitors C-2268 through C-2276 and C-2278 through C-2286 are trimmers for adjusting the filter to the proper frequency for each position of S-2201. Variable capacitors C-2267 and C-2277 are adjusted whenever V-2206 is replaced.

(5) 10.4- TO 10.5-MC MIXER V-2207.—The control grid of mixer V-2207 (figure 2-19) receives the 1.21- to 1.3-mc output of V-2206, and the suppressor grid receives 9.19 to 9.2 mc (5a) from unit 5 through J-2205 and load resistor R-2233. Test point J-2210 is provided for testing input 5a (approximately 1.3 volts). These two signals are mixed by V-2207 and the output, 10.4 to 10.5 mc, is filtered by the double-tuned filter, T-2203, C-2237 and C-2238, and is coupled through R-2242 to the control grid of amplifier V-2208.

(6) AMPLIFIERS V-2208 AND V-2209.—The filtered output of V-2207 is amplified by V-2208 (figure 2-20), filtered by double-tuned transformer T-2204, amplified again by V-2209, and filtered again by transformer T-2205. The final output (output 6b, 10.4 to 10.5 mc) is fed to unit 8 through J-2206. Test point J-2211 is provided for testing this output (approximately 0.8 volt).

(7) 10-KC STEP SWITCH S-2201.—Table 2-1, page 2-21, lists the circuit elements removed from the oscillator tank circuit and selected for the 1.21- to 1.3-mc filter for each position of S-2201. In this table, note that as switch S-2201 is moved from a lower- to a higher-numbered position, an additional inductor is removed (switched out) from the circuit by wafer D. For example, in position 3, L-2206 is removed in addition to L-2205 and L-2204.

i. FREQUENCY MULTIPLIER Z-2305 (FREQUENCY MULTIPLIER, UNIT 7).—Unit 7 receives 1 mc from unit 2 and multiplies this input by 5 and 15 to produce 5 mc for unit 9 and 15 mc for unit 8.

(1) FREQUENCY QUINTUPLER V-2301 AND AMPLIFIER V-2302.—The 1-mc signal (2d), received through J-2301, may be tested at test point J-2305 and is approximately 8.5 volts. The 1-mc signal is coupled by C-2301 to the grid of frequency quintupler V-2301

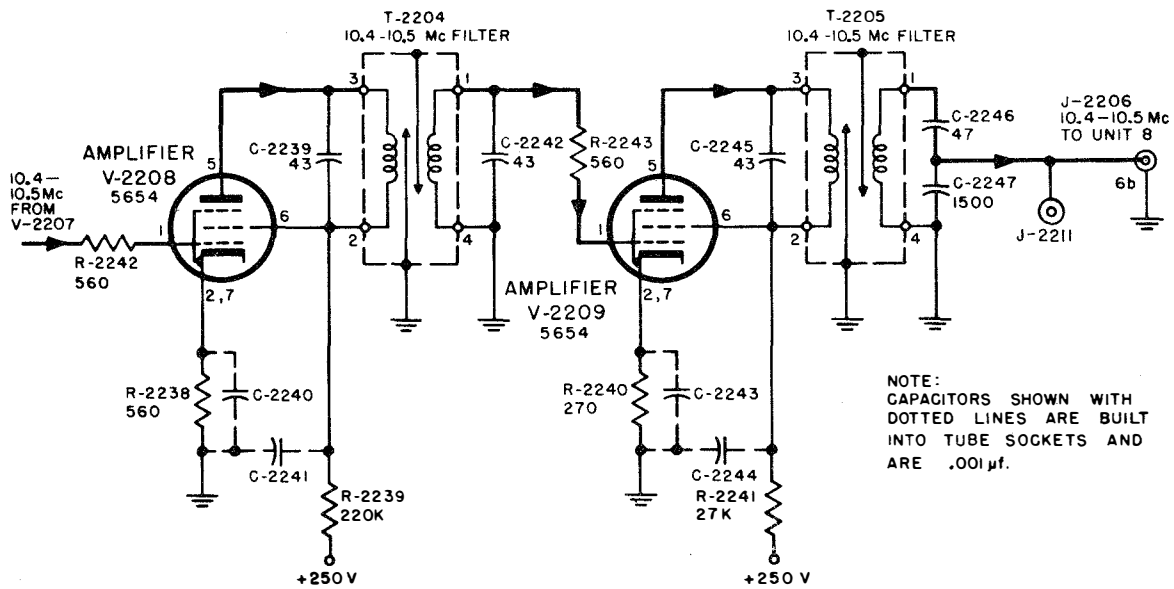
TABLE 2-1. FUNCTIONS OF 10-KC STEP SWITCH S-2201

| POSITION | OUTPUT FROM UNIT 6 (kc) | REMOVED FROM OSCILLATOR TANK BY SECTION D | SELECTED BY | |
|----------|-------------------------|---|----------------|----------------|
| | | | SECTION C | SECTION B |
| 0 | 210 | None | C-2268, C-2251 | C-2278, C-2259 |
| 1 | 220 | L-2204 | C-2269, C-2252 | C-2279, C-2260 |
| 2 | 230 | L-2205* | C-2270, C-2253 | C-2280, C-2261 |
| 3 | 240 | L-2206* | C-2271, C-2254 | C-2281, C-2262 |
| 4 | 250 | L-2207* | C-2272, C-2255 | C-2282, C-2263 |
| 5 | 260 | L-2208* | C-2273, C-2256 | C-2283, C-2264 |
| 6 | 270 | L-2209* | C-2274, C-2257 | C-2284, C-2265 |
| 7 | 280 | L-2210* | C-2275, C-2258 | C-2285, C-2266 |
| 8 | 290 | L-2211* | C-2276 | C-2286 |
| 9 | 300 | L-2212* | None | None |

* Removed in addition to preceding inductors in this column.

(figure 2-21). The quintupler distorts and amplifies the input, thus producing an output rich in harmonics. Double-tuned filter Z-2301 attenuates all frequencies in the output except the fifth harmonic, 5 mc. The 5-mc signal is applied to the control grid of amplifier V-2302 and coupled through C-2315 to the control grid of frequency tripler V-2303. The 5-mc signal is applied to the control grid of amplifier V-2302 and coupled through C-2315 to the control grid of frequency tripler V-2303. The 5-mc signal is amplified by V-2302 and filtered by the double-tuned filter, Z-2302. The 5-mc filtered output (7b) is reduced by divider C-2308 and C-2309, and fed to unit 9 through J-2302. Output 7b may be tested at J-2306 and is approximately 2.0 volts.

(2) FREQUENCY TRIPLER V-2303 AND AMPLIFIER V-2304.—Frequency tripler V-2303 (figure 2-22) receives through C-2315 a portion of the 5-mc output of V-2301. The tripler distorts and amplifies the input, producing an output that is rich in harmonics. Double-tuned filter Z-2302 attenuates all frequencies except the third harmonic (15 mc). The filter output is amplified by V-2304 and filtered again by Z-2304. The final 15-mc output (7a), reduced in amplitude by divider C-2322 and C-2323, is coupled by matching resistor R-2310 to J-2303 and fed to unit 8. Output 7a may be tested at J-2307 and is approximately 1.4 volts.



NOTE:
CAPACITORS SHOWN WITH
DOTTED LINES ARE BUILT
INTO TUBE SOCKETS AND
ARE .001 μf.

Figure 2-20. RFO Unit 6, Amplifiers V-2208 and V-2209, Simplified Schematic

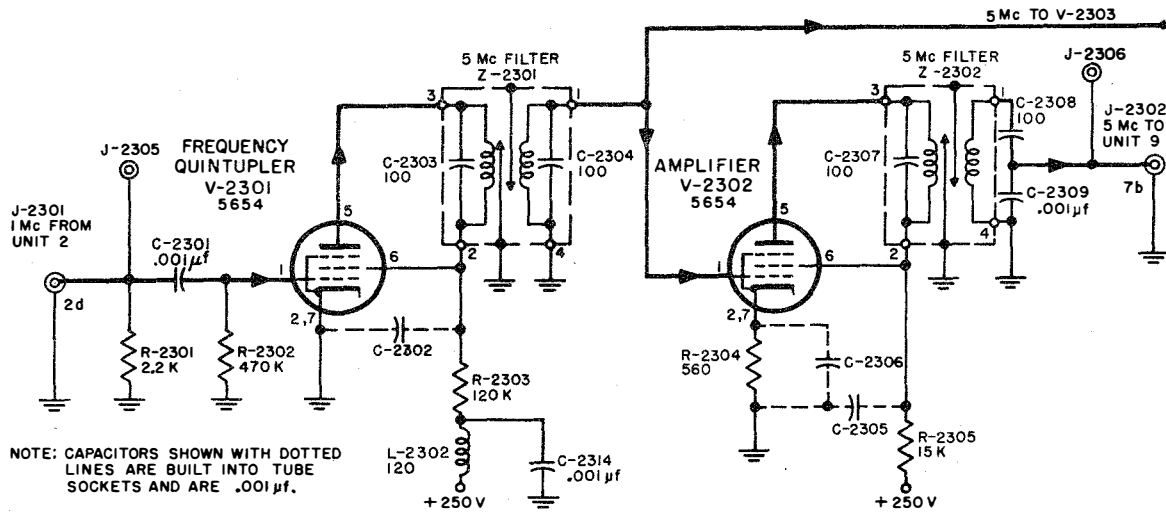


Figure 2-21. RFO Unit 7, Frequency Quintupler V-2301 and Amplifier V-2302, Simplified Schematic

j. ELECTRONIC FREQUENCY CONVERTER Z-2330 (100-KC STEP GENERATOR, UNIT 8).— Unit 8 (figure 2-23) is similar to unit 6 and includes a 1.6- to 2.5-mc phase-locked oscillator that may be tuned in steps of 100 kc. This oscillator is locked in to the 100-kc crystal-controlled oscillator in unit 1. The 1.6- to 2.5-mc oscillator output is mixed with 15 mc obtained from unit 7, thus making available frequencies in the range of 16.6 to 17.5 mc. These frequencies are then mixed with 10.4 to 10.5 mc obtained from unit 6. The resulting range of frequencies, 27 to 28 mc, available in steps of 100 kc, 10 kc, and 10 cps, is amplified, filtered, and fed to unit 9. The regulated B+ supply of unit 8 is decoupled by capacitor C-2328. For stability, V-2327, V-2328, and V-2329 use a regulated filament supply.

(1) CLIPPER V-2326A AND SHAPER V-2326B.—The 100-kc output (1d) of unit 1 is received at J-2326, and is coupled by capacitor C-2326 to the grid of clipper

V-2326A (figure 2-24). Test point J-2333 is provided for testing the input (approximately 8.1 volts) to J-2326. V-2326A clips the positive and negative peaks of the 100 kc to form approximately a square wave. To obtain more accurate control of the 1.6- to 2.5-mc oscillator, the clipped output pulse is coupled by C-2327 to shaper V-2326B, which narrows the pulse by means of the ringing coil of transformer T-2326. The pulse is coupled by the secondary of T-2326 to the control grid of mixer V-2327. Rectifier CR-2326 prevents negative overshoot.

(2) OSCILLATOR V-2329, MIXER V-2327, AND REACTANCE TUBE V-2328.—Oscillator V-2329 is a modified Colpitts oscillator operating in the range of 1.6 to 2.5 mc, in steps of 100 kc (figure 2-25). This circuit is similar to the 210- to 300-kc oscillator, V-2205 in unit 6 (see paragraph 2b (3)), except that different circuit constants are used in the tank circuit to obtain a different range of frequencies (in steps of 100 kc in-

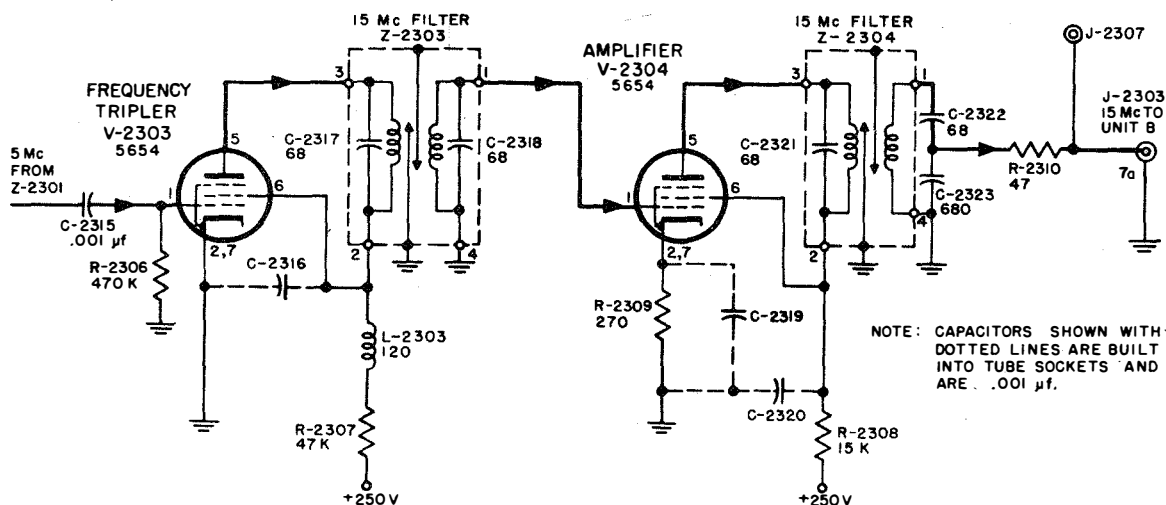


Figure 2-22. RFO Unit 7, Frequency Tripler V-2303 and Amplifier V-2304, Simplified Schematic

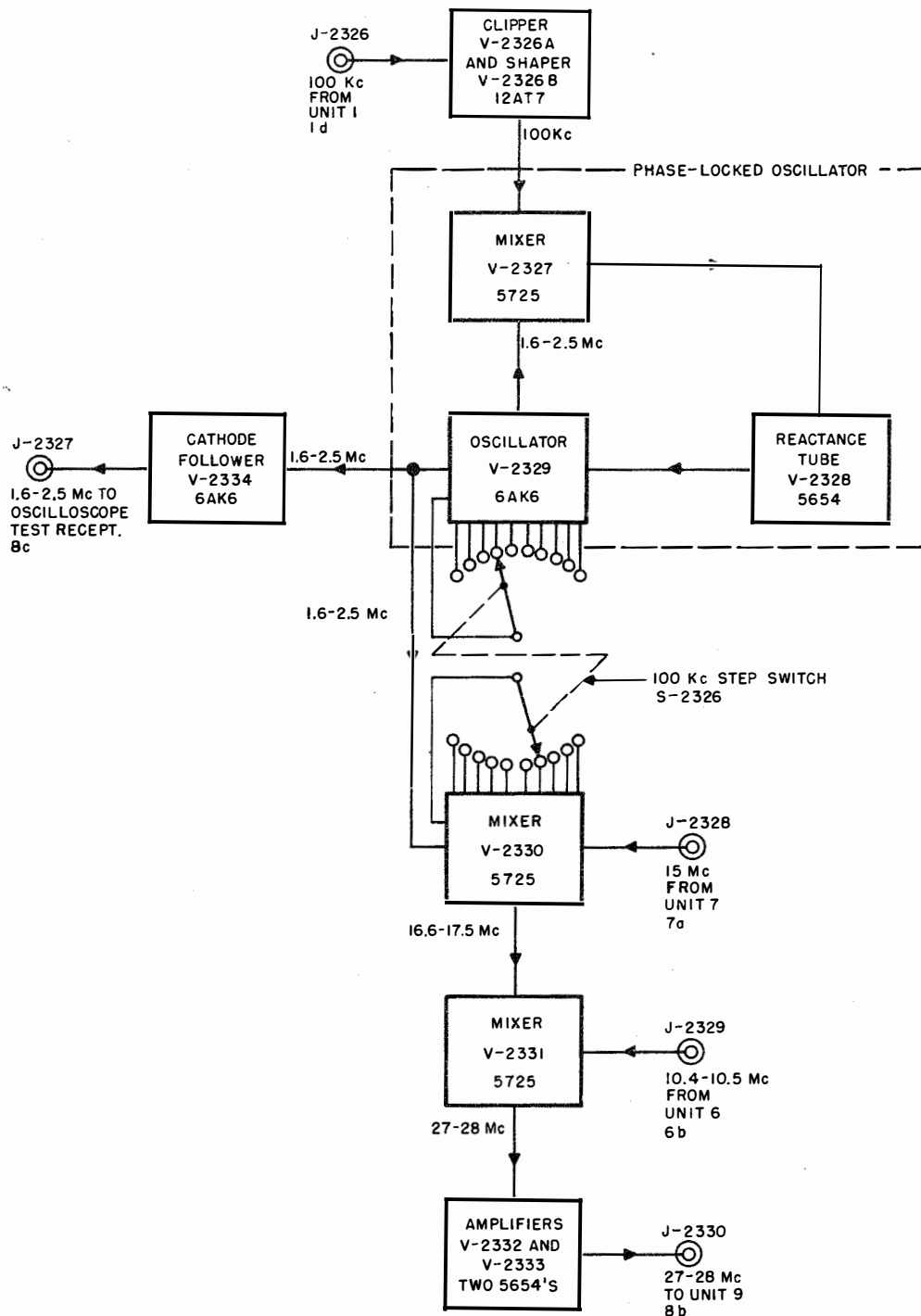


Figure 2-23. RFO Unit 8, Electronic Frequency Converter (100-Kc Step Generator), Block Diagram

stead of 10 kc). Inductors L-2327 to L-2335, inclusive, are selected for the tank circuit by section G of the 100-kc step switch, S-2326, which is controlled by the 100 KC frequency selection knob $\text{\textcircled{H}}$.

The oscillator output is coupled by C-2343 to the suppressor grid of mixer V-2327. The mixer and reactance tube control the oscillator frequency in the same

way as the corresponding tubes in unit 6 (that is, V-2327 mixes 100-kc pulses from V-2326B with the oscillator output, and V-2328 corrects the oscillator for frequency drift), except that the rejection filter is tuned to 100 kc instead of 10 kc (see paragraph 2b(3)(a)). The oscillator output is coupled to the control grid of mixer V-2330 by a low-pass filter consisting of L-2336, L-2337, C-2347, C-2348, and C-2349.

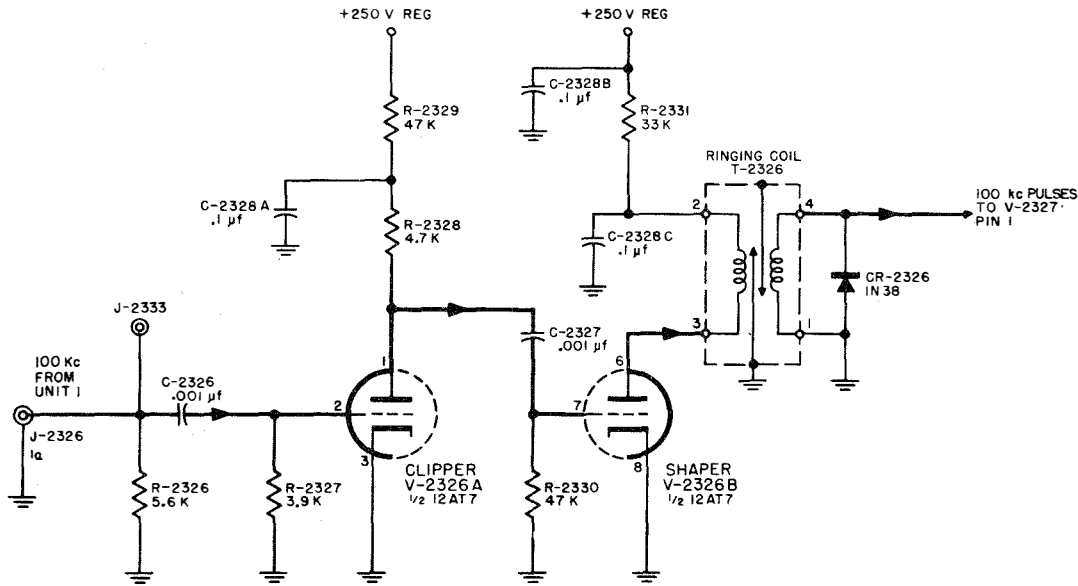


Figure 2-24. RFO Unit 8, Clipper V-2326A and Shaper V-2326B, Simplified Schematic

(3) CATHODE FOLLOWER V-2334.—A portion of the oscillator output is fed to cathode follower V-2334 (figure 2-25). This cathode follower isolates the oscillator, lowers the impedance level, and transmits 1.6 to 2.5 mc (output 8a) to the 100 KC STEP oscilloscope test receptacle in unit 14.

(4) 16.6- TO 17.5-MC MIXER V-2330.—The oscillator output is applied to the control grid of V-2330 (figure 2-26), and the 15-mc signal (7a) from unit 7 is applied to the suppressor grid. The 15-mc signal (approximately 1.3 volts) is received at J-2328 and may be tested by means of test point J-2334. The mixer output, 16.6 to 17.5 mc, is filtered by the double-tuned

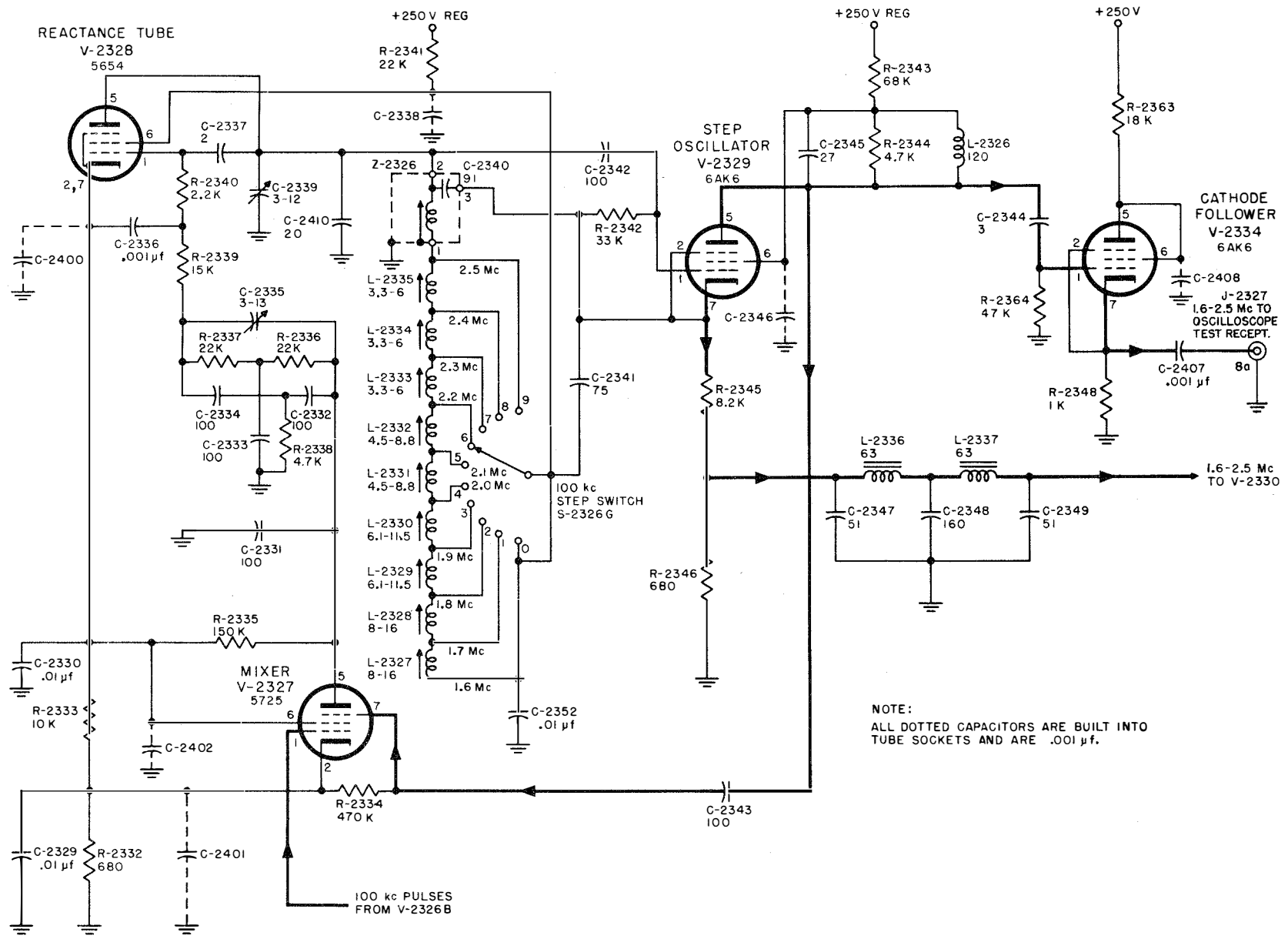
circuit comprising L-2338, C-2353, C-2405, L-2339, C-2357, C-2406 and the capacitors selected by sections E and F of S-2326, the 100-kc step switch. The response of this filter is similar to that of the unit 6 filter.

(5) 27- TO 28-MC MIXER V-2331.—The filtered output of V-2330 is applied to the suppressor grid of V-2331 (figure 2-27). The control grid receives 10.4 to 10.5 mc (6b) from unit 6 through J-2329; the magnitude of this input (approximately 0.8 volt) may be checked at test point J-2335. The mixer output, 27 to 28 mc, is filtered by the double-tuned filter, Z-2327, and then is applied to the control grid of amplifier V-2332.

TABLE 2-2. FUNCTIONS OF 100-KC STEP SWITCH S-2326

| POSITION | OUTPUT FROM UNIT 8 (mc) IN 10-CPS STEPS | REMOVED FROM OSCILLATOR TANK BY SECTION G | CAPACITORS SELECTED FOR OUTPUT MIXER FILTER | |
|----------|---|---|---|----------------|
| | | | SECTION F | SECTION E |
| 0 | 27.0-27.1 | None | C-2362, C-2358 | C-2371, C-2360 |
| 1 | 27.1-27.2 | L-2327 | C-2363, C-2359 | C-2372, C-2361 |
| 2 | 27.2-27.3 | L-2328* | C-2364 | C-2373 |
| 3 | 27.3-27.4 | L-2329* | C-2365 | C-2374 |
| 4 | 27.4-27.5 | L-2330* | C-2366 | C-2375 |
| 5 | 27.5-27.6 | L-2331* | C-2367 | C-2376 |
| 6 | 27.6-27.7 | L-2332* | C-2368 | C-2377 |
| 7 | 27.7-27.8 | L-2333* | C-2369 | C-2378 |
| 8 | 27.8-27.9 | L-2334* | C-2370 | C-2379 |
| 9 | 27.9-28.0 | L-2335* | C-2356 | C-2404 |

* Removed in addition to preceding inductors in this column.



NOTE:
ALL DOTTED CAPACITORS ARE BUILT INTO
TUBE SOCKETS AND ARE .001 μf.

Figure 2-25. RFO Unit 8, Mixer V-2327, Step Oscillator V-2329, Reactance Tube V-2328 and Cathode Follower V-2334, Simplified Schematic

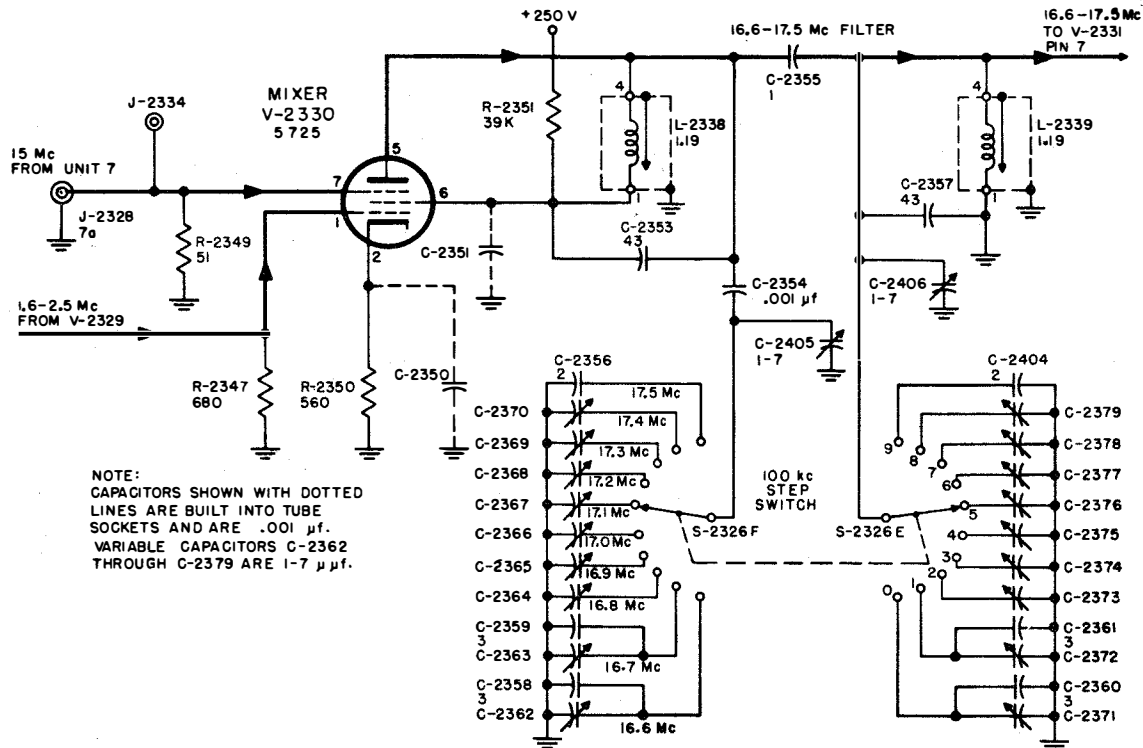


Figure 2-26. RFO Unit 8, Mixer V-2330, Simplified Schematic

(approximately 1.2 volts) may be tested at test point J-2336.

(7) 100-KC STEP SWITCH S-2326.—The positions of S-2326, together with the corresponding final output frequencies of unit 8 and the circuit elements selected to obtain these frequencies, are given in table 2-2, page 2-24. As S-2326 is switched from its lowest to its highest-numbered position, the listed inductors are removed by switch section G.

k. ELECTRONIC FREQUENCY CONVERTER Z-2426 (FREQUENCY CONVERTER, UNIT 9).—Unit 9 receives 27 to 28 mc (in steps of 10 cps) from unit 8 and 5 megacycles from unit 7. The second harmonic of the 5-mc signal provides a 10-mc frequency. These frequencies are then mixed as shown in the following table.

TABLE 2-3. UNIT 9 MIXER OUTPUTS

| MIXED FREQUENCIES (mc) | MIXER OUTPUT (mc) |
|------------------------|-------------------|
| (27 to 28), -5 | 22 to 23 |
| (27 to 28), ±0 | 27 to 28 |
| (27 to 28), +5 | 32 to 33 |
| (27 to 28), +10 | 37 to 38 |

The mixer output is filtered four times and amplified three times, and then sent to unit 11A, 11B, or 11C, depending on the desired final RFO output frequency.

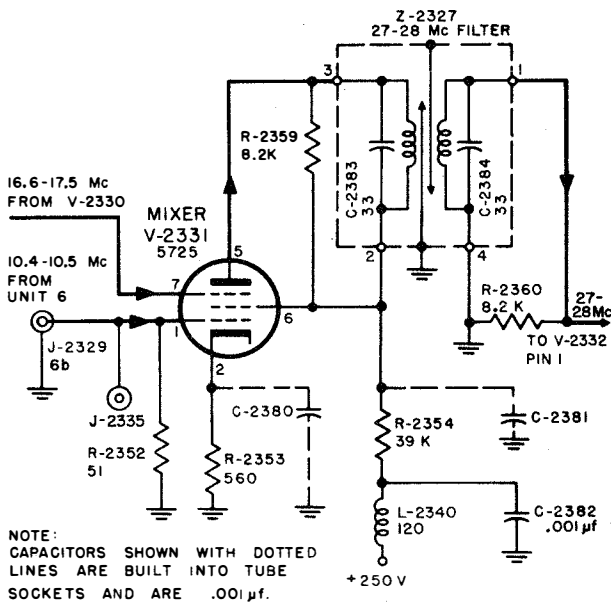
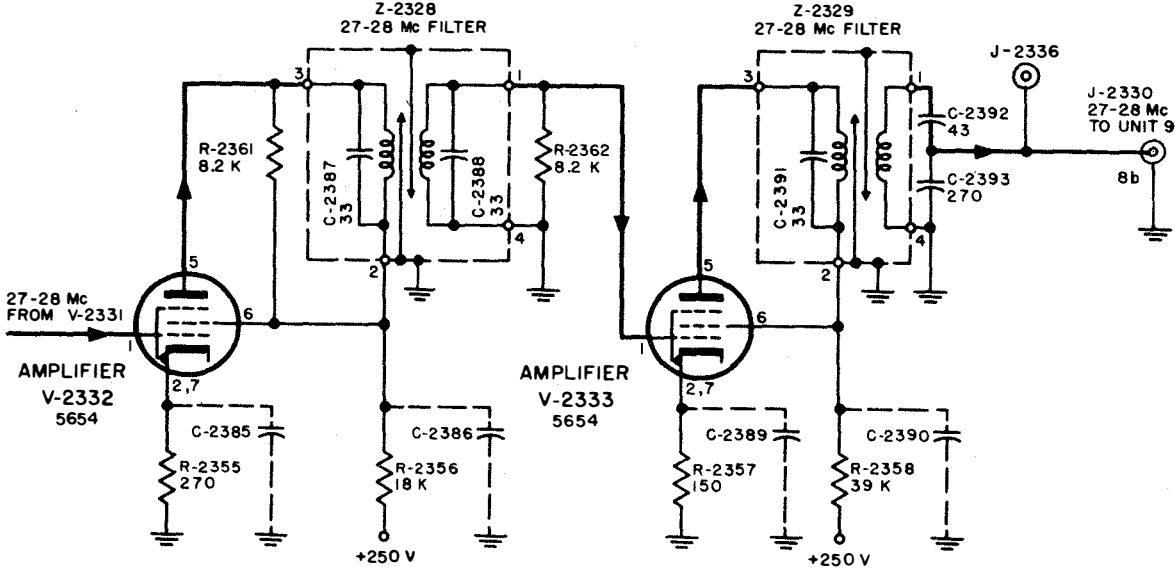


Figure 2-27. RFO Unit 8, Mixer V-2331, Simplified Schematic

(6) AMPLIFIERS V-2332 AND V-2333.—The filtered 27- to 28-mc signal is amplified by V-2332 (figure 2-28), filtered by the double-tuned filter, Z-2328, amplified by V-2333, and filtered again by Z-2329 to reject spurious frequencies. The final 27- to 28-mc output signal (8b), reduced by divider C-2392 and C-2393, is fed to unit 9 through J-2330. Output 8b

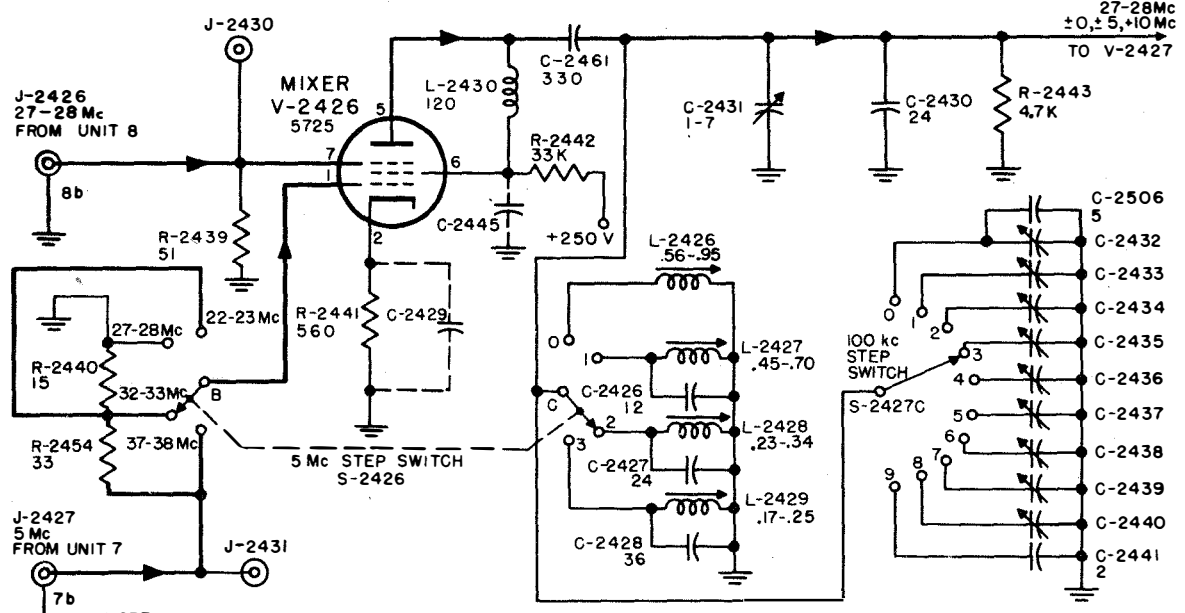


NOTE: CAPACITORS WITH DOTTED LINES ARE BUILT INTO TUBE SOCKETS AND ARE .001 μ f.

Figure 2-28. RFO Unit 8, Amplifiers V-2332 and V-2333, Simplified Schematic

(1) MIXER V-2426.—The 27- to 28-mc output (8b) of unit 8 is applied through J-2426 to the suppressor grid of mixer V-2426 (figure 2-29). The 5-mc output (7b) of unit 7, which is rich in harmonics, is applied to the control grid through J-2427 and the front of wafer B of 5-mc step switch S-2426. Test points J-2430 and J-2431 are provided for testing inputs 8b (approximately 1.2 volts) and 7b (approximately 1.9 volts), respectively. The 5-mc signal is adjusted to the proper level for efficient mixing by R-2454, R-2440,

and wafer B (the gain compensation section) of S-2426, the 5-mc step switch, which is set by the $\text{\textcircled{A}}$ KNOB frequency selection control on the mounting front panel. When an output of 27 to 28 mc is chosen, the mixer grid is shorted to ground. In the amplifier V-2427 grid circuit, the proper components for the chosen frequency are selected by the C wafers of S-2426 and S-2427. The output of V-2426 contains a band of frequencies 1 mc wide. Wafer C of the 5-mc step switch, S-2426, selects one of the four filters, each of which has a pass-



NOTE: CAPACITORS SHOWN WITH DOTTED LINES ARE BUILT INTO TUBE SOCKETS AND ARE .001 μ f. VARIABLE CAPACITORS C-2432 TO C-2440 ARE 1-7 μ f.

Figure 2-29. RFO Unit 9, Mixer V-2426, Simplified Schematic

The final output (9), 27 to 28 mc ± 0 , ± 5 , $+10$ mc, is transmitted through J-2428 to unit 11A, 11B or 11C, depending on the desired output frequency of the RFO, which is selected by the bandswitch S-2996 in unit 14. Test point J-2432 is provided for testing output 9a (approximately 1.6 volts). The B+ supply of unit 9 is decoupled by a filter network comprising L-2446, C-2499, C-2500, C-2501, R-2452, and R-2453.

(4) 5-MC STEP SWITCH S-2426.—Table 2-4, page 2-29, shows the positions of switch S-2426, the frequency range obtained for each position, and the components switched in or out of the filters or the amplifier dropping-resistor network, as the switch is rotated from the lowest- to the highest-numbered position.

(5) 100-KC STEP SWITCH S-2427.—The table below shows the positions of switch S-2427, the frequency obtained for each position, and the components switched in or out of the filters or the amplifier dropping-resistor network, as the switch is rotated from the lowest- to the highest-numbered position. Switch S-2426 gives a frequency range of 1 megacycle for each of its four positions. Switch S-2427 selects a 100-kc range within the 1-mc range selected by S-2426.

1. FREQUENCY MULTIPLIER Z-2526 (1-MC STEP GENERATOR, UNIT 10).—This unit receives the 1-mc output of unit 2 and multiplies this output to 7, 8, 13, 14, 16, 17, 18, 19, 20, 21, or 22 mc. It employs a harmonic generator, and a system of amplifiers with tuned filters in their plate circuits. The tuned filters are selected by the \textcircled{R} KNOB control on the mounting front panel. The output of unit 10 is fed to unit 11A, 11B, or 11C, depending on the desired final output frequency of the RFO.

(1) HARMONIC GENERATOR V-2526. — The 1-mc output (2e) of unit 2 (figure 2-31) is received at J-2526, and applied, across R-2526, to the harmonic generator control grid. Test point J-2529 is provided for testing input 2e (approximately 8.6 volts). V-2526 is operated class C. Its low plate and screen voltage causes limiting of the signal input. Because of this combined action, harmonic generator V-2526 distorts the input greatly; as a result, the output is rich in harmonics. The B+ supply of unit 10 is decoupled by filter C-2548, C-2549, and R-2529 to prevent r-f voltage from leaking back to the power supply.

(2) AMPLIFIERS V-2527, V-2528, AND V-2529. — Amplifier V-2527 is similar to the harmonic generator (figure 2-32). The harmonic generator output is coupled to the amplifier grid by C-2532. The amplifier distorts and amplifies the harmonic generator output. The amplifier output is very rich in harmonics and therefore very suitable for use in deriving the frequencies desired in the final output of unit 10. The grid circuit of V-2528 consists of a tuned filter comprising C-2526 and any one of the inductors, L-2526 to L-2536, inclusive, as chosen by section F of 1-mc step switch S-2526. This switch is controlled by the \textcircled{R} KNOB control on the mounting. Switch S-2526 may be set in any one of 11 positions, numbered from 0 to 10. In position 0, inductor L-2526 is selected. Its value is such that the plate filter circuit will be tuned to the seventh harmonic of 1 megacycle, and the plate circuit of V-2527 will attenuate all frequencies other than 7 megacycles. With S-2526 in position 1, all frequencies other than 8 megacycles will be attenuated (figure 2-32), etc. To prevent the next high-gain amplifier (V-2528) from oscillating, load resistor R-2532 is provided in the filter circuit and R-2534 is provided in series with the grid of amplifier

TABLE 2-5. FUNCTIONS OF 100-KC STEP SWITCH S-2427

| POSITION | FREQUENCY RANGE (kc) | RESISTORS REMOVED BY SECTION B | FILTER CIRCUIT COMPONENTS SELECTED BY | | | |
|----------|----------------------|--------------------------------|---------------------------------------|-------------------|-------------------|-------------------|
| | | | SECTION C | SECTION D | SECTION E | SECTION F |
| 0 | 0-100 | None | C-2506, C-2432 | C-2507, C-2448 | C-2508, C-2464 | C-2509, C-2479 |
| 1 | 100-200 | R-2430 | C-2433 | C-2449 | C-2465 | C-2480 |
| 2 | 200-300 | R-2431* | C-2434 | C-2450 | C-2466 | C-2481 |
| 3 | 300-400 | R-2432* | C-2435 | C-2451 | C-2467 | C-2482 |
| 4 | 400-500 | R-2433* | C-2436 | C-2452 | C-2468 | C-2483 |
| 5 | 500-600 | R-2434* | C-2437 | C-2453 | C-2469 | C-2484 |
| 6 | 600-700 | R-2435* | C-2438 | C-2454 | C-2470 | C-2485 |
| 7 | 700-800 | R-2436* | C-2439 | C-2455 | C-2471 | C-2486 |
| 8 | 800-900 | R-2437* | C-2440 | C-2456 | C-2472 | C-2487 |
| 9 | 900-1000 | R-2438* | C-2441 | C-2457 | C-2473 | C-2488 |

* Removed in addition to preceding resistors in this column.

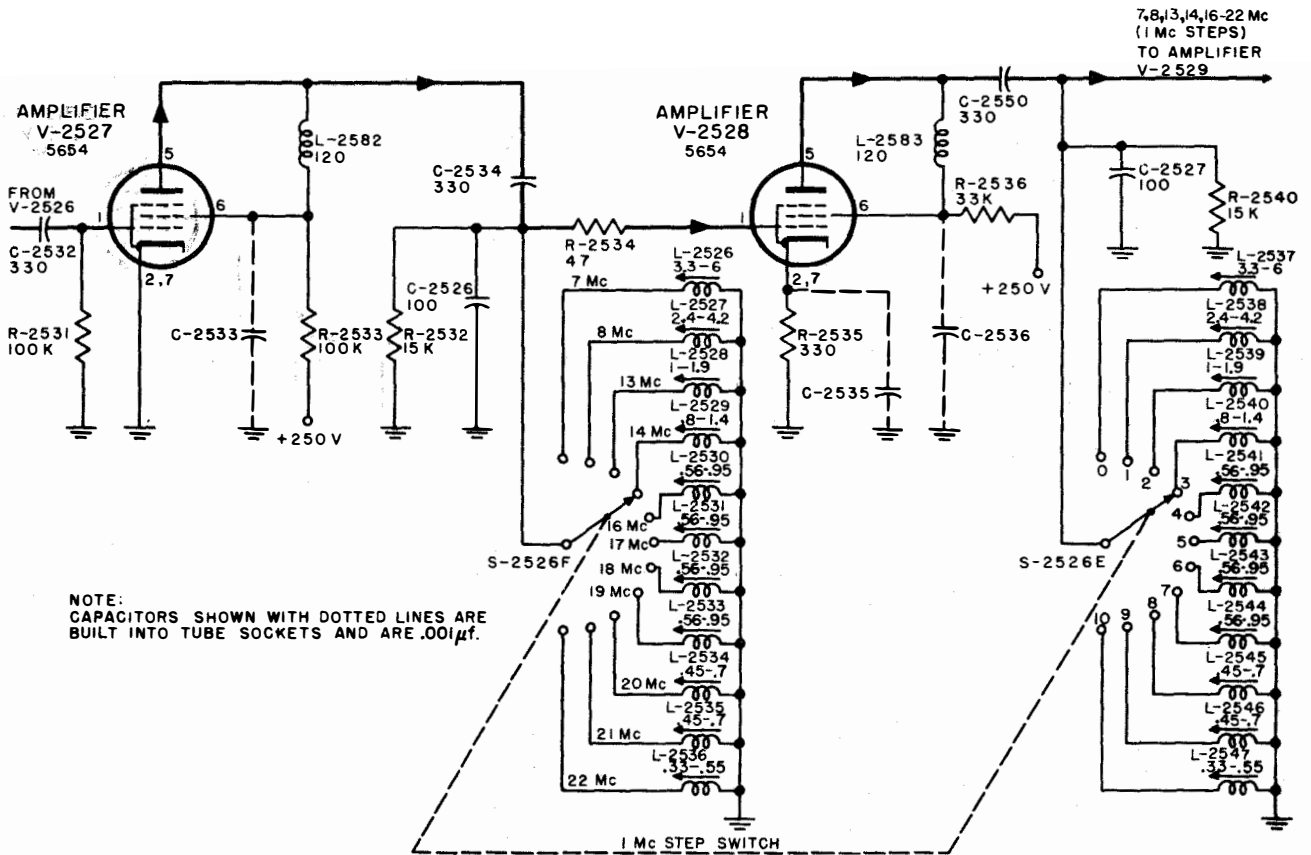


Figure 2-32. RFO Unit 10, Amplifiers V-2527 and V-2528, Simplified Schematic

TABLE 2-6. FUNCTIONS OF 1-MC STEP SWITCH S-2526

| POSITION | OUTPUT FREQUENCY (mc) UNIT 10 | FILTER COILS SELECTED BY | | | | |
|----------|-------------------------------|--------------------------|-----------|-----------|-----------|-----------|
| | | SECTION F | SECTION E | SECTION D | SECTION C | SECTION B |
| 0 | 7 | L-2526 | L-2537 | L-2548 | L-2559 | L-2570 |
| 1 | 8 | L-2527 | L-2538 | L-2549 | L-2560 | L-2571 |
| 2 | 13 | L-2528 | L-2539 | L-2550 | L-2561 | L-2572 |
| 3 | 14 | L-2529 | L-2540 | L-2551 | L-2562 | L-2573 |
| 4 | 16 | L-2530 | L-2541 | L-2552 | L-2563 | L-2574 |
| 5 | 17 | L-2531 | L-2542 | L-2553 | L-2564 | L-2575 |
| 6 | 18 | L-2532 | L-2543 | L-2554 | L-2565 | L-2576 |
| 7 | 19 | L-2533 | L-2544 | L-2555 | L-2566 | L-2577 |
| 8 | 20 | L-2534 | L-2545 | L-2556 | L-2567 | L-2578 |
| 9 | 21 | L-2535 | L-2546 | L-2557 | L-2568 | L-2579 |
| 10 | 22 | L-2536 | L-2547 | L-2558 | L-2569 | L-2580 |

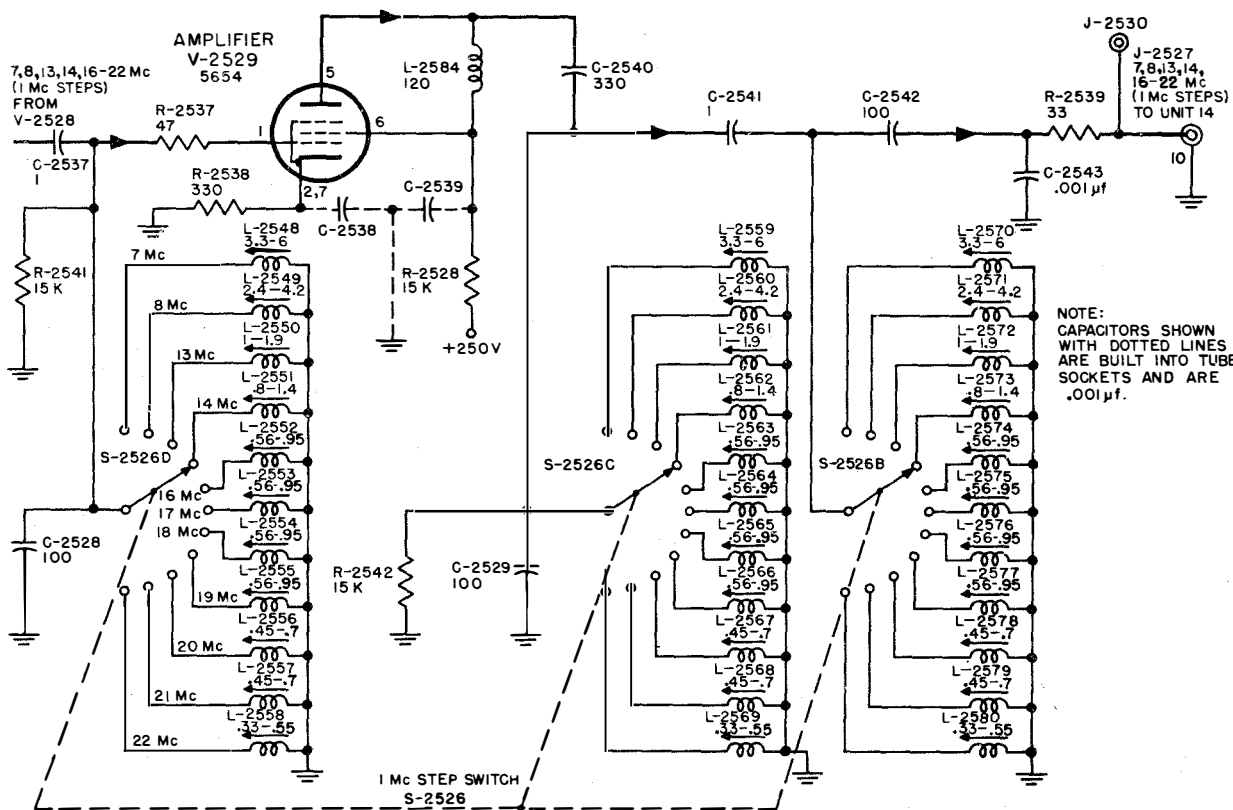


Figure 2-33. RFO Unit 10, Amplifier V-2529, Simplified Schematic

V-2528. The signal is coupled to V-2528 by C-2534. The output of V-2528 is coupled to V-2529 by C-2550. Amplifiers V-2528 and V-2529 are similar to amplifier V-2527. Amplifier V-2529 is provided with a double-tuned input filter circuit in which inductors L-2537 through L-2547 are selected by section E of S-2526 (figure 2-32) and inductors L-2548 through L-2558 are selected by section D of S-2526 (figure 2-33). Amplifier V-2529 has, in addition, a double-tuned output filter circuit. The frequency of the input filter is controlled by sections D and E of S-2526 and the frequency of the output filter is controlled by sections C and B of S-2526. The final output of unit 10 is reduced in amplitude by the divider C-2542 and C-2543, and is applied to unit 11A, 11B, or 11C, which is selected by the bandswitch, S-2996 in unit 14, through coupling resistor R-2539 and receptacle J-2527. Test point J-2530 is provided for testing output 10 (approximately 0.4 volt).

(3) 1-MC STEP SWITCH S-2526.—Table 2-6, page 2-31, lists the positions of the ganged sections of step switch S-2526 and the corresponding filter inductors and frequencies selected by the switch.

m. ELECTRONIC FREQUENCY CONVERTER Z-2626 (FREQUENCY CONVERTER, UNIT 11A).—Units 11A, 11B, and 11C are the final frequency converters in the RFO. When the transmitter is set to operate on a frequency in the range of 0.3 to 6 mc, the bandswitch, S-2996 in unit 14, selects unit 11A as the recipient of the output from units 9 and 10. Unit 11A then mixes the frequencies received from units 9 and 10, and delivers a frequency in the range of 0.3 to 6 mc to the RFA. Similarly, when the transmitter is set to operate on a frequency in the range of 6 to 16 mc, unit 11B is selected to receive the outputs of units 9 and 10. When a frequency in the range of 16 to 26 mc is desired, unit 11C is selected as the final frequency converter.

TABLE 2-7. RFO OUTPUT TO RFA

| FINAL FREQUENCY CONVERTER SELECTED BY S-2996 | OUTPUT OF UNIT 9 (mc) | OUTPUT OF UNIT 10 (mc) | FREQUENCY CONVERTER OUTPUT TO RFA (mc) |
|--|-------------------------------|-----------------------------------|--|
| Unit 11A | 22-23 or 27-28 | 18, 19, 20, 21, or 22 | 0.3-6 |
| Unit 11B | 22-23, 27-28, 32-33, or 37-38 | 13, 14, 16, 17, 18, 19, 20, or 22 | 6-16 |
| Unit 11C | 22-23, 27-28, 32-33, or 37-38 | 7, 8, 13, 14, 16, 17, 20, or 21 | 16-26 |

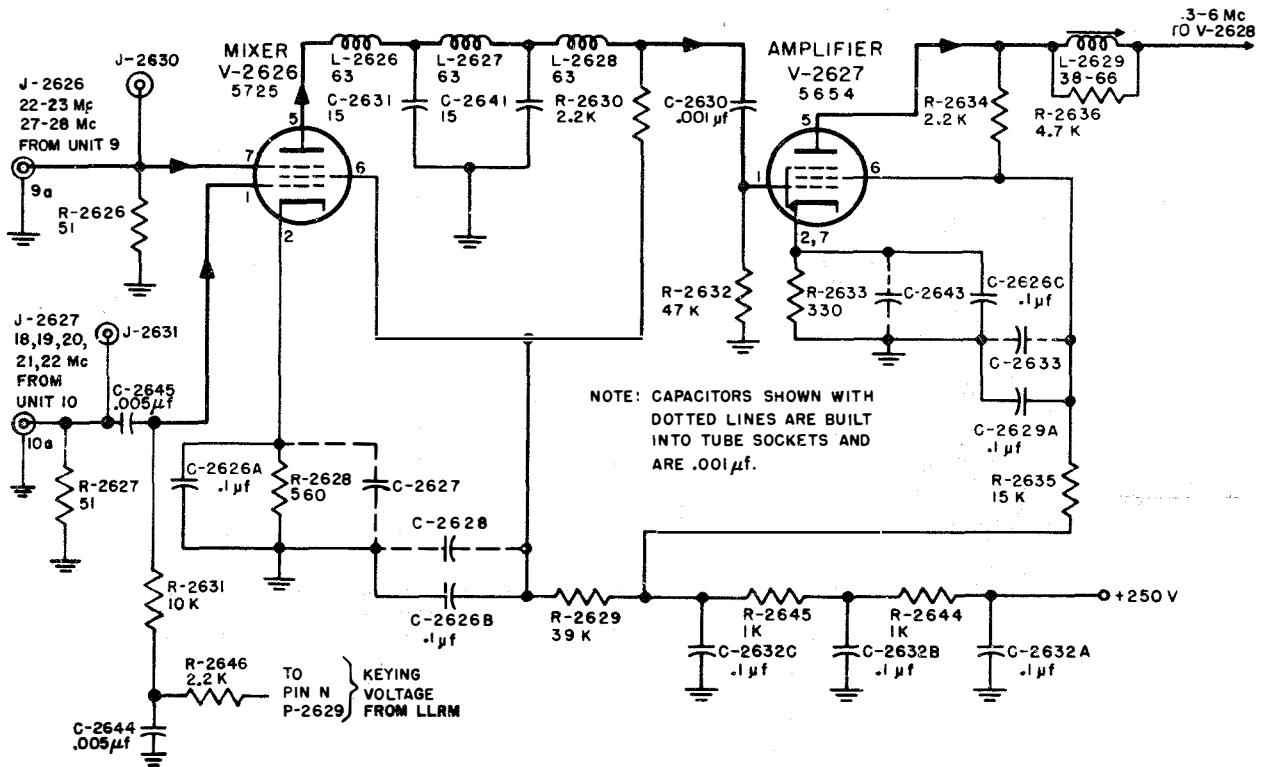


Figure 2-34. RFO Unit 11A, Mixer V-2626 and Amplifier V-2627, Simplified Schematic

The preceding table shows the RFO frequency output bands, the corresponding outputs from units 9 and 10, and the final frequency converter selected by S-2996. A more detailed table, including the step-switch positions in units 9 and 10, is given in table 2-14. Unit 11A consists of a mixer, two amplifiers, filters, and a cathode follower output stage.

(1) MIXER V-2626.—The output (10a) of unit 10 is applied from J-2627 to the control grid of mixer V-2626 (figure 2-34) through coupling capacitor C-2645. The output (9a) of unit 9 is applied from J-2626 to the mixer suppressor grid. Test points J-2630 and J-2631 are provided for testing inputs 9a (approximately 1.4 volts) and 10a (approximately 0.3 volt), respectively. Mixer V-2626 produces an output in accordance with the frequency settings on the mounting front panel. For example, if the desired output is from zero to one megacycle, the mixer will receive 22 to 23 mc from unit 9 and 22 mc from unit 10. A low-pass filter, comprising L-2626, L-2627, L-2628, C-2631, and C-2641, extends the high-frequency response to six megacycles. R2626 and R-2627 are terminating resistors for the inputs from units 9 and 10. The output of the keying circuit of the low level radio modulator (see paragraph 7c(7)) is connected to the control grid of V-2626 through a decoupling filter comprising C-2644 and R-2646 and grid resistor R-2631. In FSK and facsimile operation a permanent ground is applied and V-2626 conducts as explained above. In hand-key and machine-key operation the keying signal, zero for mark and -35

volts for space, is applied to the control grid. The zero potential during mark allows V-2626 to conduct, while the -35 volts during space cuts V-2626 off and accordingly cuts off any output from the RFO. In phone operation, -35 volts is applied to the grid of V-2626 when the press-to-talk button is not depressed, cutting off the RFO in the same manner as the space signal. This keying function is introduced to insure that the key-up radiation of the transmitter remains below the maximum allowable level of 400 micromicrovolts.

(2) AMPLIFIERS V-2626 AND V-2628.— The mixer output is amplified by V-2627 and V-2628 (figures 2-34 and 2-35). These amplifiers are identical and are provided with video compensation (L-2629 and L-2630) to extend the high-frequency limit. In addition to the decoupling filter, comprising C-2632, R-2645, and R-2644, which serves all of the stages in unit 11A, the mixer and amplifiers are further decoupled from the B+ power supply by capacitors C-2626 and C-2629.

(3) CATHODE FOLLOWER V-2629.—To obtain sufficient drive (approximately two volts) for the RFA, a cathode follower output stage, V-2629 (figure 2-35), working into an impedance of approximately 50 ohms, is used as the output stage. Filter L-2631 attenuates spurious frequencies. The output (11a) is coupled by C-2642 to J-2628 and test point J-2632.

n. ELECTRONIC FREQUENCY CONVERTER Z-2651 (FREQUENCY CONVERTER, UNIT 11B).— Receptacle J-2651 receives the 13-, 14-, 16-, 17-, 18-,

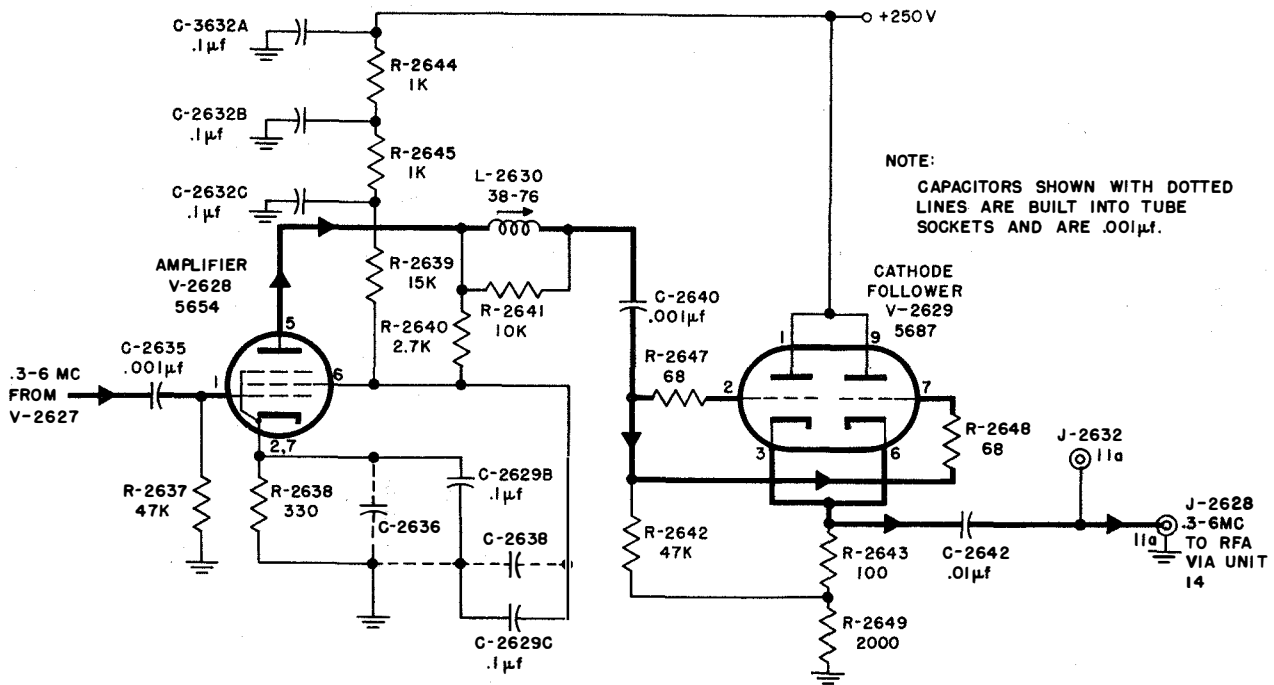


Figure 2-35. RFO Unit 11A, Amplifier V-2628 and Cathode Follower V-2629, Simplified Schematic

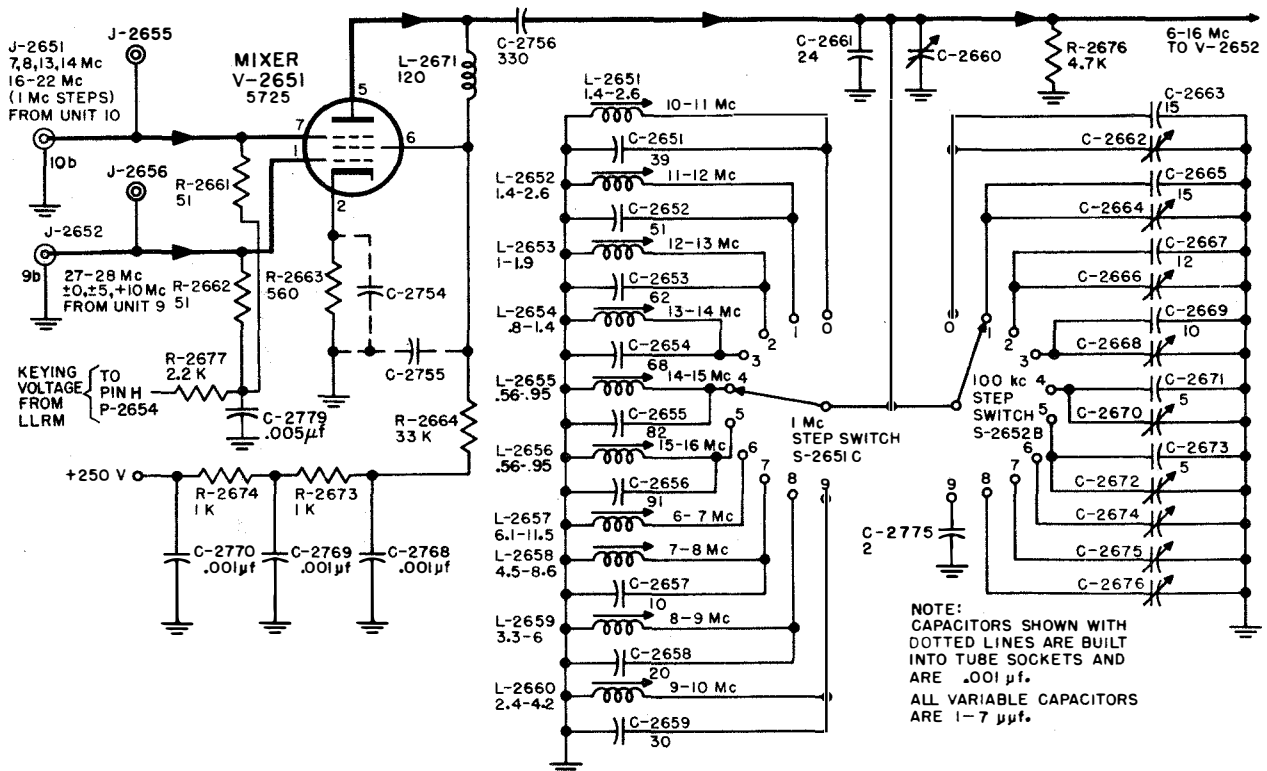


Figure 2-36. RFO Unit 11B, Mixer V-2651, Simplified Schematic

TABLE 2-8. FUNCTIONS OF 1-MC STEP SWITCH S-2651

| POSITION | FREQUENCY RANGE (mc) | RESISTORS REMOVED BY SECTION B | FILTER CIRCUIT COMPONENTS SELECTED BY | | | |
|----------|----------------------|--------------------------------|---------------------------------------|-------------------|-------------------|-------------------|
| | | | SECTION C | SECTION D | SECTION E | SECTION F |
| 6 | 6-7 | None | L-2657 | L-2667 | L-2681 | L-2691 |
| 7 | 7-8 | R-2656 | L-2658, C-2657 | L-2668, C-2684 | L-2682, C-2707 | L-2692, C-2734 |
| 8 | 8-9 | R-2657* | L-2659, C-2658 | L-2669, C-2685 | L-2683, C-2708 | L-2693, C-2735 |
| 9 | 9-10 | R-2658* | L-2660, C-2659 | L-2670, C-2686 | L-2684, C-2709 | L-2694, C-2736 |
| 0 | 10-11 | R-2659* | L-2651, C-2651 | L-2661, C-2678 | L-2675, C-2701 | L-2685, C-2728 |
| 1 | 11-12 | R-2651* | L-2652, C-2652 | L-2662, C-2679 | L-2676, C-2702 | L-2686, C-2729 |
| 2 | 12-13 | R-2652* | L-2653, C-2653 | L-2663, C-2680 | L-2677, C-2703 | L-2687, C-2730 |
| 3 | 13-14 | R-2653* | L-2654, C-2654 | L-2664, C-2681 | L-2678, C-2704 | L-2688, C-2731 |
| 4 | 14-15 | R-2654* | L-2655, C-2655 | L-2665, C-2682 | L-2679, C-2705 | L-2689, C-2732 |
| 5 | 15-16 | R-2655* | L-2656, C-2656 | L-2666, C-2683 | L-2680, C-2706 | L-2690, C-2733 |

* Removed in addition to preceding resistors in this column.

19-, 20-, or 22-mc signal (10b) from unit 10. Test point J-2655 is provided for testing input 10b (approximately 0.4 volt). Receptacle J-2652 receives the 22- to 23-, 27- to 28-, 32- to 33-, or 37- to 38-mc signal (9b) from unit 9. Test point J-2656 is provided for testing input 9b (approximately 1.4 volts). These signals are mixed by V-2651, and amplified by V-2652, V-2653, and V-2654. A 1-mc step switch, S-2651, and a 100-kc step switch, S-2652, are provided to tune the filters for each stage as required to provide the desired bandwidth and to reject spurious frequencies.

(1) MIXER V-2651.—The inputs from units 10 and 9 are applied, respectively, to the suppressor and control grids of the mixer, V-2651 (figure 2-36). The frequencies of these inputs are determined by the settings on the mounting front panel. For example, to select 12 mc, the (AA) KNOB control is set at 2 and the (BB) KNOB control is set at 8. As a result, input 9b is 32 to 33 mc and input 10b is 20 mc. Mixer V-2651 combines these inputs to produce an output of 12 to 13 mc. The 1-mc step switch, S-2651, selects the proper tuned filter circuit for the mixer. This switch is controlled by the MC control knob (CC). For an output frequency setting of less than 10 mc, control (CC) is set to the megacycle value of the frequency; for outputs of 10 mc or higher, control (CC) is set to the second figure of the megacycle value. Therefore, in the case of 12-mc value, control (CC) is set at 2. To provide for the wide bandwidth requirements, 100-kc step switch S-2652 changes the capacitance in parallel with the 1-mc step filters so that each 1-mc filter may be tuned in 100-kc steps. R-2676,

shunted across the circuit, also increases bandwidth. Switch S-2652 is controlled by the 100 KC knob (DD). Paragraph 2r(2) provides a complete description of the functioning of the above-mentioned frequency control knobs. The suppressor and control grids are connected through resistors R-2661 and R-2662 respectively, and the decoupling filter comprising R-2667 and R-2779 to the keying circuit output of the LLRM in the same manner as the mixer V-2626 in unit 11A.

(2) AMPLIFIERS V-2652, V-2653, AND V-2654.—These amplifiers (figure 2-37) are identical except that V-2652 and V-2653 are provided with dropping resistors R-2651 through R-2659, which are wired to contacts of section B of switch S-2651. By changing the screen and plate voltage at different frequencies, the gain of these amplifiers is varied, and approximately equal output is obtained for all frequencies. The inter-stage filters for these amplifiers are selected and tuned by S-2651 and S-2652 in the same manner as for the mixer. The final 6- to 16-mc output (11b) is coupled by the voltage divider, C-2766 and C-2767, to J-2653. Test point J-2657 is provided for testing output 11b (approximately 2.4 volts). The entire B+ supply is decoupled by a filter network composed of C-2768, C-2769, C-2770, R-2673, and R-2674.

(3) 1-MC STEP SWITCH S-2651.—The above table shows the filter networks selected by the 1-mc step switch, S-2651, and the dropping resistors successively removed from the amplifier circuits as the switch is rotated progressively from positions 6 to 9 and then from 0 to 5.

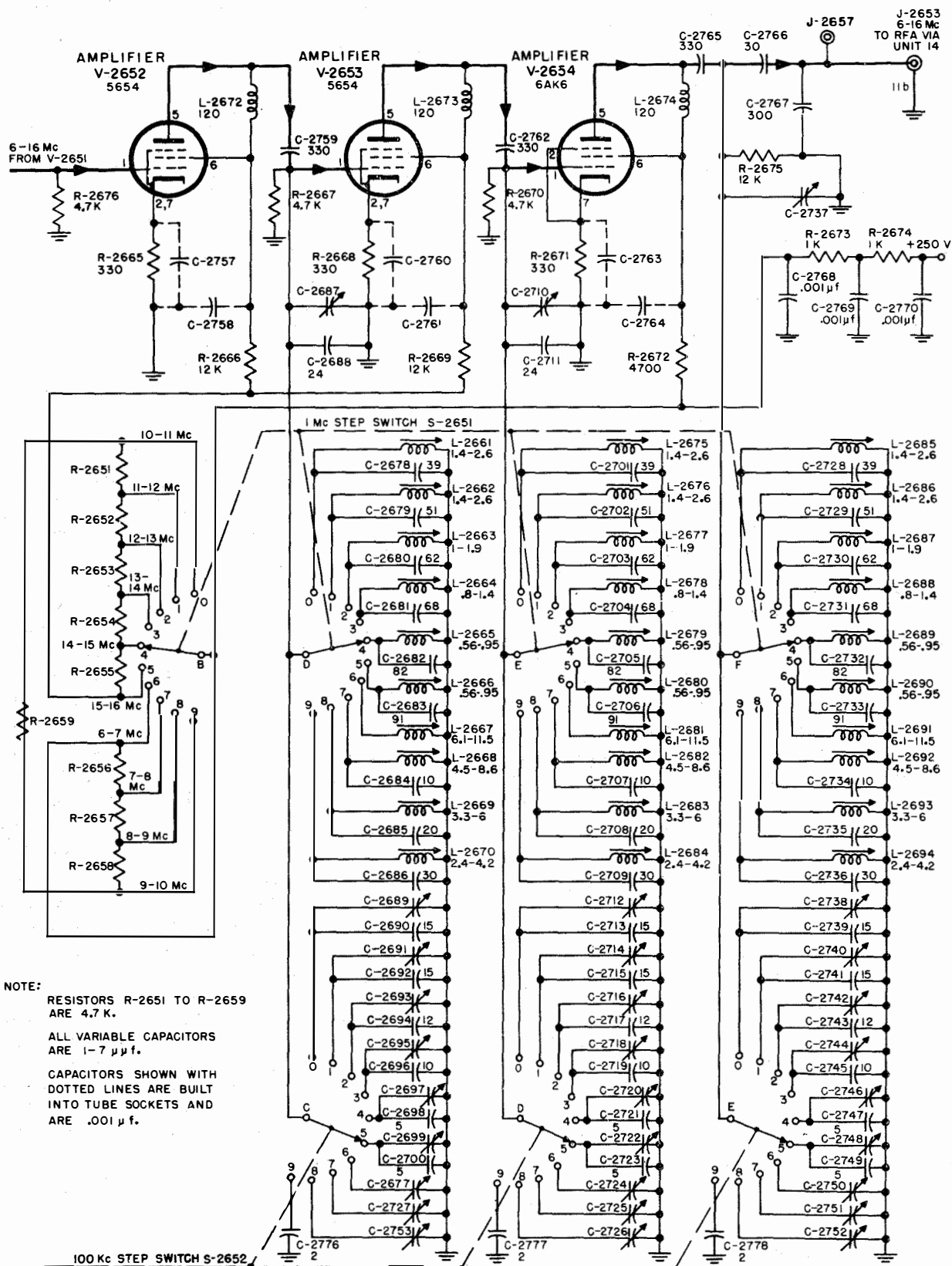


Figure 2-37. RFO Unit 11B, Amplifiers V-2652, V-2653 and V-2654, Simplified Schematic

TABLE 2-9. FUNCTIONS OF 100-KC STEP SWITCH S-2652

| POSITION | FREQUENCY RANGE (kc) | FILTER CIRCUIT CAPACITORS SELECTED BY | | | |
|----------|----------------------|---------------------------------------|-------------------|-------------------|-------------------|
| | | SECTION B | SECTION C | SECTION D | SECTION E |
| 0 | 0-100 | C-2662, C-2663 | C-2689, C-2690 | C-2712, C-2713 | C-2738, C-2739 |
| 1 | 100-200 | C-2664, C-2665 | C-2691, C-2692 | C-2714, C-2715 | C-2740, C-2741 |
| 2 | 200-300 | C-2666, C-2667 | C-2693, C-2694 | C-2716, C-2717 | C-2742, C-2743 |
| 3 | 300-400 | C-2668, C-2669 | C-2695, C-2696 | C-2718, C-2719 | C-2744, C-2745 |
| 4 | 400-500 | C-2670, C-2671 | C-2697, C-2698 | C-2720, C-2721 | C-2746, C-2747 |
| 5 | 500-600 | C-2672, C-2673 | C-2699, C-2700 | C-2722, C-2723 | C-2748, C-2749 |
| 6 | 600-700 | C-2674 | C-2677 | C-2724 | C-2750 |
| 7 | 700-800 | C-2675 | C-2727 | C-2725 | C-2751 |
| 8 | 800-900 | C-2676 | C-2753 | C-2726 | C-2752 |
| 9 | 900-1000 | C-2775 | C-2776 | C-2777 | C-2778 |

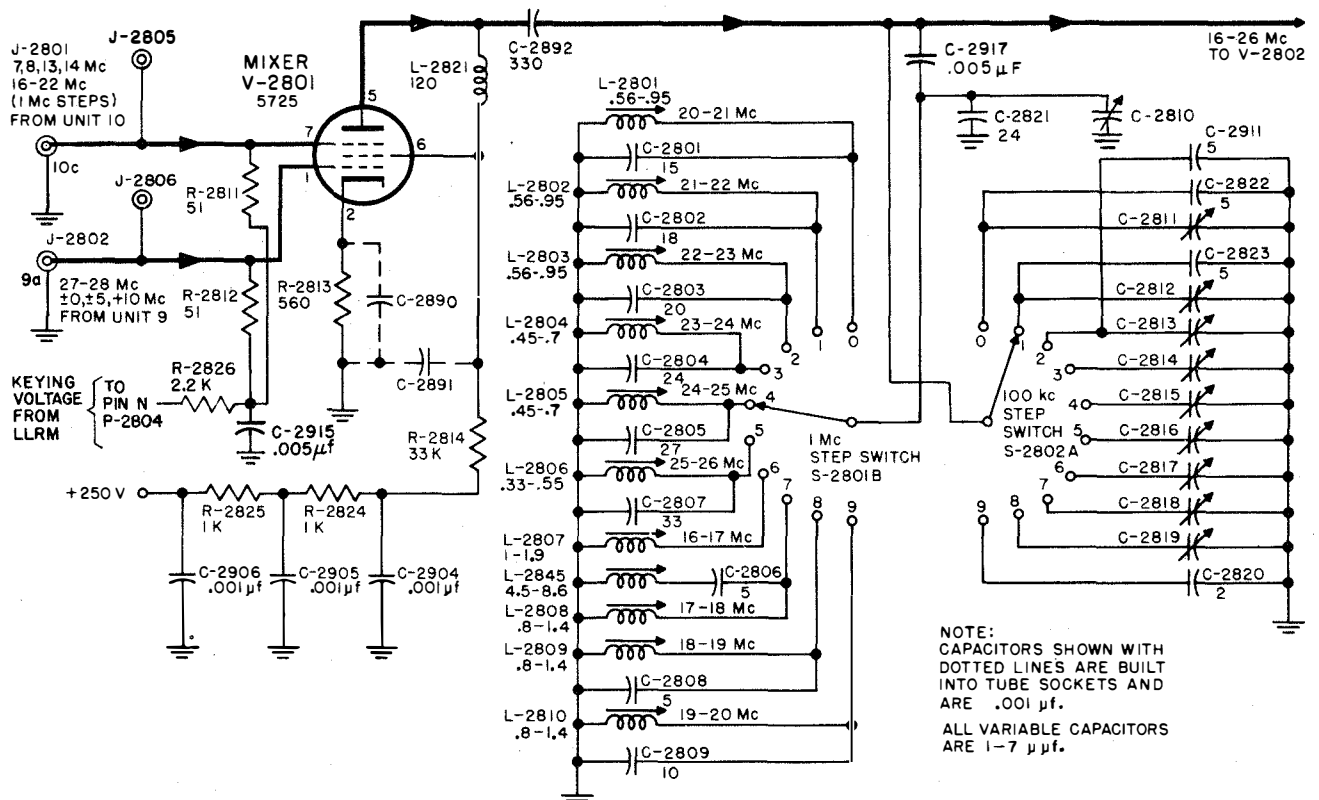


Figure 2-38. RFO Unit 11C, Mixer V-2801, Simplified Schematic

TABLE 2-10. FUNCTIONS OF 1-MC STEP SWITCH S-2801

| POSITION | FREQUENCY RANGE (mc) | RESISTORS REMOVED BY SECTION A | FILTER CIRCUIT COMPONENTS SELECTED BY | | | |
|----------|----------------------|--------------------------------|---------------------------------------|------------------------------|-------------------|-------------------|
| | | | SECTION B | SECTION C | SECTION D | SECTION E |
| 6 | 16-17 | None | L-2807 | L-2817 | L-2827 | L-2837 |
| 7 | 17-18 | R-2806 | L-2845, L-2808, C-2806 | L-2846, L-2818, C-2829 | L-2828 | L-2838 |
| 8 | 18-19 | None* | L-2809, C-2808 | L-2819, C-2841 | L-2829, C-2863 | L-2839, C-2885 |
| 9 | 19-20 | R-2808* | L-2810, C-2809 | L-2820, C-2842 | L-2830, C-2864 | L-2840, C-2886 |
| 0 | 20-21 | R-2809* | L-2801, C-2801 | L-2811, C-2824 | L-2841, C-2847 | L-2831, C-2869 |
| 1 | 21-22 | R-2801* | L-2802, C-2802 | L-2812, C-2825 | L-2842, C-2848 | L-2832, C-2880 |
| 2 | 22-23 | R-2802* | L-2803, C-2803 | L-2813, C-2826 | L-2843, C-2849 | L-2833, C-2881 |
| 3 | 23-24 | R-2803* | L-2804, C-2804 | L-2814, C-2827 | L-2844, C-2850 | L-2834, C-2882 |
| 4 | 24-25 | R-2804* | L-2805, C-2805 | L-2815, C-2828 | L-2825, C-2861 | L-2835, C-2883 |
| 5 | 25-26 | None | L-2806, C-2807 | L-2816, C-2830 | L-2826, C-2862 | L-2836, C-2884 |

* Removed in addition to preceding resistors in this column.

(4) 100-KC STEP SWITCH S-2652.—Table 2-9, page 2-37, shows the frequency ranges and capacitors switched into the 1-mc filter circuits by the 100-kc step switch, S-2652. Switch S-2652 selects a 100-kc range within the 1-mc range selected by switch S-2651.

o. ELECTRONIC FREQUENCY CONVERTER Z-2801 (FREQUENCY CONVERTER, UNIT 11C).—This unit is similar to unit 11B. It differs in frequency range (16 to 26 mc) and components required for this range. The keying input from the LLRM is fed to both the mixer, V-2801, and the first of the amplifier stages, V-2802. The step switches, S-2801 and S-2802, are mechanically coupled to the step switches in unit 11B.

(1) MIXER V-2801.—The suppressor of mixer V-2801 (figure 2-38) receives from J-2801 the 7-, 8-, 13-, 14-, 16-, 17-, 20- or 21-mc signal (10c) from unit 10. Test point J-2805 is provided for testing input 10c (approximately 0.4 volt). The control grid receives 22 to 23 mc, 27 to 28 mc, 32 to 33 mc, or 37 to 38 mc (9c) from unit 9. Test point J-2806 is provided for testing input 9c (approximately 1.2 volts). These signals are mixed in accordance with the (AA) KNOB and (BB) KNOB controls. For example, if the (AA) KNOB and (BB) KNOB controls are both set to 3 (23 mc), unit 9 delivers 37 to 38 mc to unit 11C and unit 10 delivers 14 mc. Under these circumstances, mixer V-2801 delivers an output of 23 to 24 mc. (See paragraph 2r(2).) Resistors R-2811 and R-2812 connect the suppressor and screen grids to the LLRM keying circuit through the decoupling filter comprising R-2826 and C-2915.

(2) AMPLIFIERS V-2802, V-2803, AND V-2804.—These amplifiers (figure 2-39) are similar to the corresponding amplifiers in unit 11B with the exception that LLRM keying is fed to the control grid of V-2802. The LLRM keying input is connected first through the same decoupling network employed in the input to V-2801, then through additional decoupling components R-2827 and C-2916 to grid resistor R-2815. The final 16- to 26-mc output (11c), which has been filtered four times to reject spurious frequencies, is fed to J-2803 at a level of approximately two volts rms. Test point J-2807 is provided for testing this output. The B+ supply for the entire unit is decoupled by C-2904, C-2905, C-2906, R-2824, and R-2825.

(3) 1-MC STEP SWITCH S-2801.—Table 2-10, above, shows the filter network components selected by the 1-mc step switch, S-2801, and the dropping resistor switched out of the amplifier circuits, as this switch is rotated progressively from positions 6 to 9 and then from 0 to 5.

(4) 100-KC STEP SWITCH S-2802.—The following table shows the frequency ranges and the capacitors selected for the 1-mc filter circuits by the 100-kc step switch, S-2802. Switch S-2802 selects a 100-kc range within the 1-mc range selected by switch S-2801.

p. ELECTRICAL EQUIPMENT RACK Z-2901 (MOUNTING, UNIT 14).—The mounting (unit 14) is the rack into which the subunits of the RFO are plugged. It contains the manual frequency controls, the

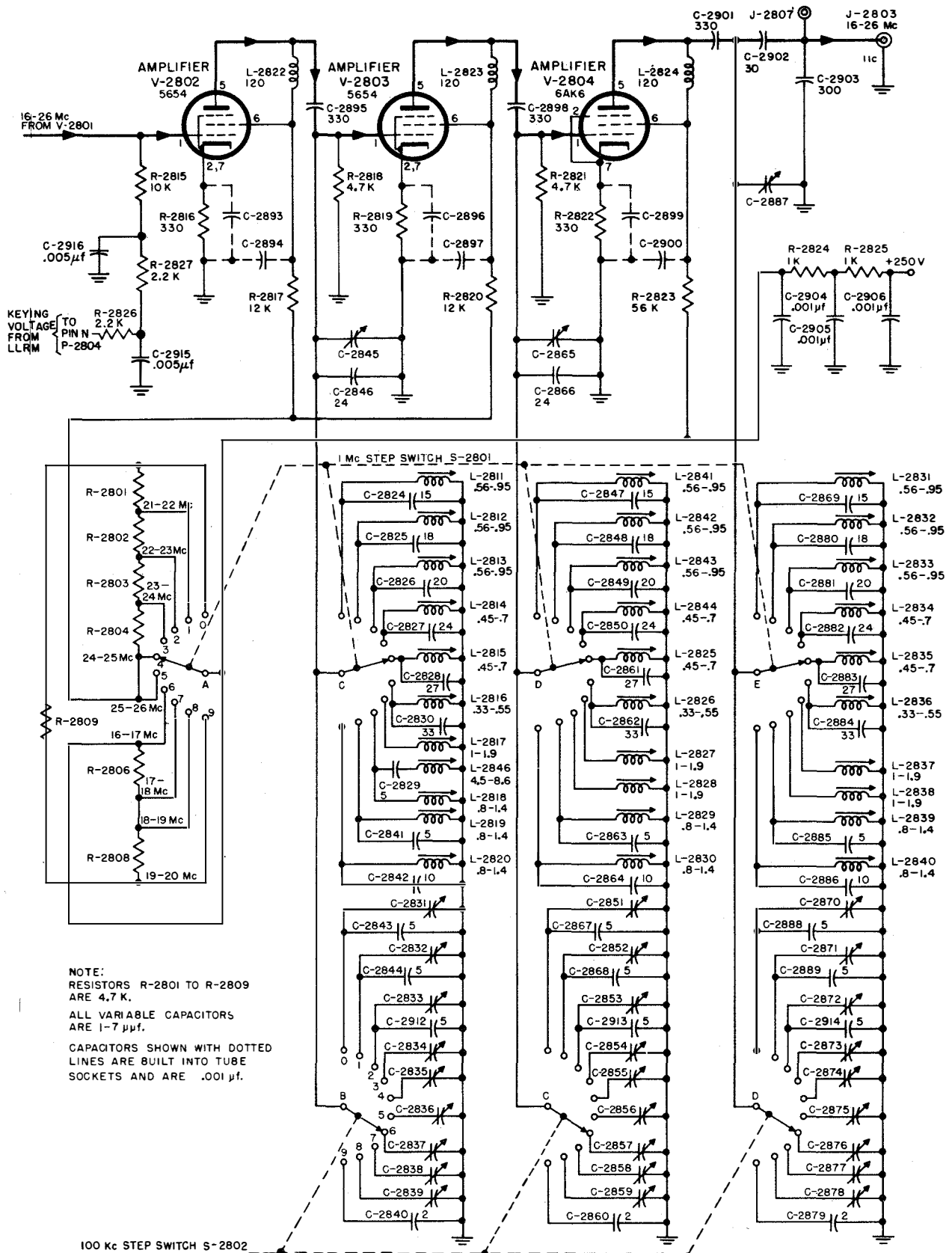


Figure 2-39. RFO Unit 11C, Amplifiers V-2802, V-2803, and V-2804, Simplified Schematic

TABLE 2-11. FUNCTIONS OF 100-KC STEP SWITCH S-2802

| POSITION | FREQUENCY RANGE (kc) | FILTER CIRCUIT CAPACITORS SELECTED BY | | | |
|----------|----------------------|---------------------------------------|-------------------|-------------------|-------------------|
| | | SECTION A | SECTION B | SECTION C | SECTION D |
| 0 | 0-100 | C-2811, C-2822 | C-2831, C-2843 | C-2851, C-2867 | C-2870, C-2888 |
| 1 | 100-200 | C-2812, C-2823 | C-2832, C-2844 | C-2852, C-2868 | C-2871, C-2889 |
| 2 | 200-300 | C-2911, C-2813 | C-2912, C-2833 | C-2913, C-2853 | C-2914, C-2872 |
| 3 | 300-400 | C-2814 | C-2834 | C-2854 | C-2873 |
| 4 | 400-500 | C-2815 | C-2835 | C-2855 | C-2874 |
| 5 | 500-600 | C-2816 | C-2836 | C-2856 | C-2875 |
| 6 | 600-700 | C-2817 | C-2837 | C-2857 | C-2876 |
| 7 | 700-800 | C-2818 | C-2838 | C-2858 | C-2877 |
| 8 | 800-900 | C-2819 | C-2839 | C-2859 | C-2878 |
| 9 | 900-1000 | C-2820 | C-2840 | C-2860 | C-2879 |

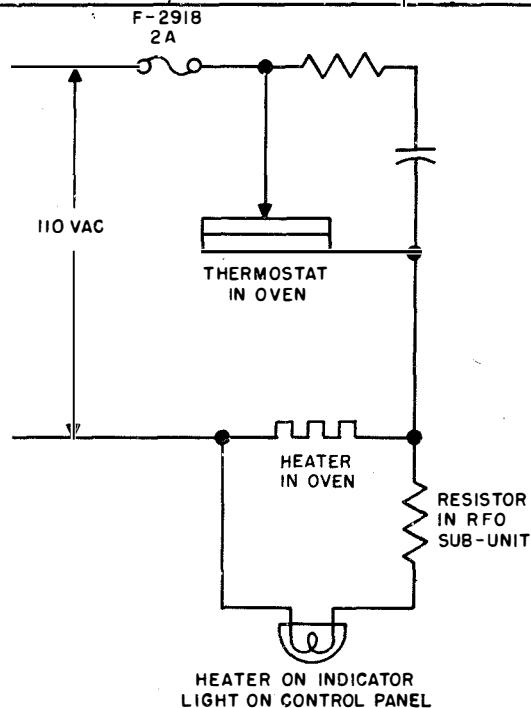


Figure 2-40. RFO Oscillator Heater Circuit, Generalized Schematic

bandswitch, S-2996, the filament and crystal oven heater supplies, heater indicator lights, the frequency-shift oscillator input circuits, zero adjust indication circuit, units 3 and 12 adjustment controls, door switch S-2920, test points for supply voltages, oscilloscope test receptacles, interconnecting wiring for the RFO units, and access wiring interconnecting the receptacles for the antenna tuning control indicator to the cabinet wiring. The manual frequency control and bandswitch S-2996

are discussed under selection of frequencies (paragraph 2r), the frequency-shift oscillator input circuit and adjustment is covered in paragraph 2f, unit 3 adjustment is described in paragraph 2e and the door switch is a component of the "500 W disable" circuit covered in the RFA (paragraph 10e(1)). The filament and oven heater are shown in the primary power distribution diagram provided in Section 7.

(1) HEATER INDICATOR LIGHTS.—The heater indicator light circuits are shown in figures 2-3, 2-10, and 2-11. A generalized circuit is illustrated in figure 2-40.

(2). TEST POINTS.—The following table lists the test points on unit 14.

TABLE 2-12. UNIT 14 TEST POINTS

| TEST PINS ON SOCKET XV-2916 | VOLTAGE PRESENT |
|-----------------------------|--|
| Pin 1 | Ground |
| Pin 2 | 6.3 V AC, Reg, Fil |
| Pin 3 | 6.3 V AC, Unreg, Fil |
| Pin 4 | +250 V DC, Reg |
| Pin 5 | +250 V DC, Unreg |
| Pin 6 | -24 V DC, after TD |
| Pin 7 | Keying Voltage to unit 12 |
| Pin 8 | Keying Voltage to units 11A, 11B and 11C |

(3) OSCILLOSCOPE TEST RECEPTACLES.—A set of oscilloscope test receptacles are brought out on the front of the mounting. These receptacles provide signals from certain of the subunits that can be con-

nected to a standard test oscilloscope for servicing and checking purposes. Table 2-13 lists these receptacles, the signal carried, and the subunit from which the signal is obtained.

TABLE 2-13. OSCILLOSCOPE TEST RECEPTACLES

| TEST RECEPTACLE | SIGNAL | |
|-----------------|---------------------------------|--------------|
| | FREQUENCY | FROM SUBUNIT |
| J-2929 | 10 kc | 6 |
| J-2930 | 210-300 kc in 10-kc steps | 6 |
| J-2931 | 100 kc | 1 |
| J-2932 | 1.6-2.5 mc in 100-kc steps | 8 |
| J-2933 | 100 kc | 3 (Int Osc) |
| J-2934 | 100 kc $\pm \frac{\Delta F}{2}$ | 12 (FS Osc) |

100-kc signal from unit 1 is coupled through C-2927 to the cathode of CR-2920. The two frequencies are mixed with CR-2920, diode detecting the resultant sum of the two frequencies and the difference between the two frequencies (beat frequency), across the load resistor, R-2968. The network comprised of R-2967 and C-2928 is a low-pass filter which will bypass the high order frequencies, passing only the beat frequency to the triode grid of electron ray tube V-2917. V-2917 gives a visual indication of when the measured frequency is at the same frequency as the standard. As discussed above, the signal applied to V-2917 will fluctuate at the beat frequency, which means the current flowing in the triode section of V-2917 will fluctuate in a corresponding manner and therefore the triode plate voltage, which is also the voltage applied to the ray-control electrode, will vary and the shadow angle on the target will open and close at the beat frequency. The effect of regulating the INT. OSC. ZERO ADJ. control, L-2080, or the F.S.O. ZERO ADJ. control, R-2916, can be determined by the shadow appearing on the target of V-2917, a zero beat (or constant shadow angle) indicating that an output of 100 kc has been obtained.

Note

If the beat frequency is high, the rapid fluctuations of the shadow angle on V-2917 will appear merely as a blur. Care should be taken to distinguish this from a zero beat condition.

(4) ZERO ADJUST INDICATING CIRCUIT.— The zero adjust indicator circuit (figure 2-41) provides a means for comparing the 100-kc output from the frequency-shift oscillator (unit 12) or the 100-kc output from the interpolation oscillator (unit 3) with the standard 100-kc signal from the crystal-controlled oscillator (unit 1). The outputs from unit 3 and unit 12 are connected to the ZERO ADJUST switch (S-2917). In the INT. OSC. position the signal from unit 3 is connected to the circuit. When S-2917 is set at the F.S. OSC. position, the signal from unit 12 is fed to the circuit. The signal to be compared is connected to the plate of crystal rectifier CR-2920 while the standard

g. CONTROL-INDICATOR C-1352/SRT (CONTROL-INDICATOR). — The control-indicator is designed for front-panel mounting on unit 14 of the RFO and contains all controls and indicators required for remote manual tuning of the two major units comprising the antenna tuning equipment, namely, Radio Frequency Tuner TN-229/SRT and Antenna Coupler CU-372/SRT. The control-indicator contains seven controls and

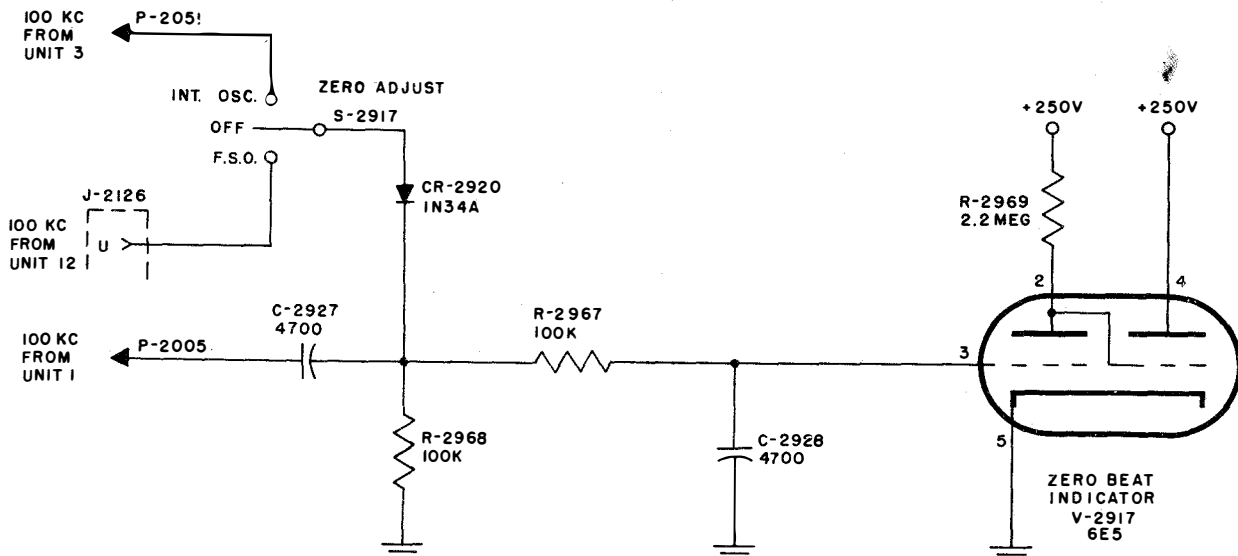


Figure 2-41. Zero Adjust Indicating Circuit, Simplified Schematic

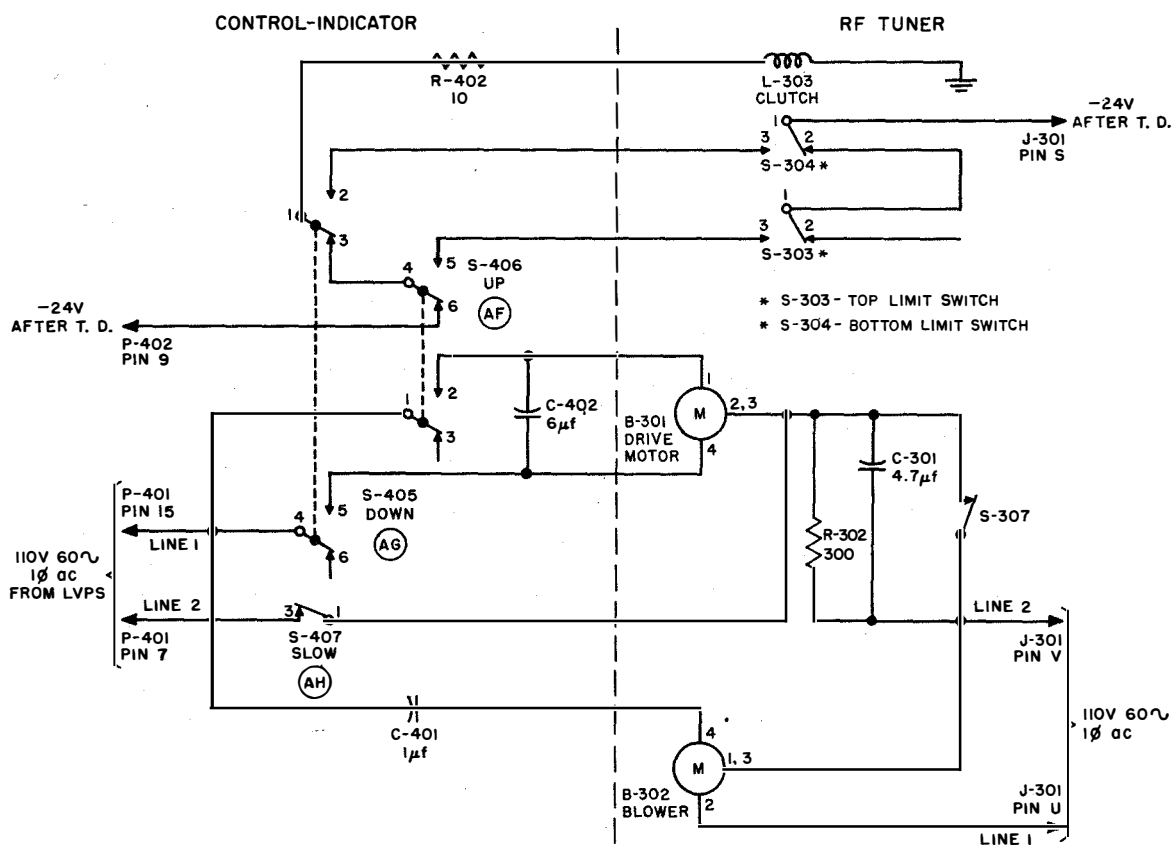


Figure 2-42. R-F Tuner Drive Motor Control Circuit, Simplified Schematic

two indicating meters required to manually tune the antenna tuning equipment. There are two auxiliary controls that are used to calibrate one of the indicating meters.

(1) DRIVE MOTOR CONTROL CIRCUIT.—The drive motor control circuit (figure 2-42) controls the operation of the drive motor in the radio frequency tuner, which, in turn, positions the shorting ring on the main tuning coil.

(a) The drive motor, B-301 in the radio frequency tuner, is a split phase induction motor that can be run in either direction, depending on which phase has the phase-shifting capacitor in series with it. Depressing the DOWN (AG) switch, S-405, applies 110-volt, 60-cycle, single-phase power through contacts 4 and 5 of S-405 and contacts 1 and 3 of S-407 to the drive motor. This source of a-c power comes from the low voltage power supply and is available only when the transmitter bay is energized. With this connection, phase shifting capacitor C-402 is introduced in series with the winding of the drive motor, which will provide driving torque to produce motor rotation in the direction that causes the shorting ring to move down on the main tuning coil. If the UP (AF) switch, S-406, had been depressed instead of the DOWN (AG) switch, a-c power would have been delivered to the down motor through contacts 1 and 2 of S-406. This connection would place phase shifting capacitor C-402 in series with the other

winding of the drive motor, causing driving torque in the opposite direction, which would move the shorting ring up on the main tuning coil.

(b) A speed governor, S-307, is attached to the shaft of the drive motor and is set to open at approximately 500 rpm. As long as the SLOW (AH) switch, S-407, is not operated, the action of the governor, S-307, is bypassed as one side of the a-c supply is fed directly to the drive motor through contacts 1 and 3 of S-407. When the SLOW (AH) switch is depressed, the a-c line is connected to the drive motor through the governor, S-307. To energize the drive motor, either the UP (AF) or DOWN (AG) switch must also be depressed to connect on the other side of the a-c line to the motor. As long as the motor is receiving at less than 500 rpm, the contacts of S-307 remain closed and full driving torque is applied. When motor speed reaches 500 rpm, and the governor contacts open, the network comprised of R-302 and C-301 is introduced into the a-c line in series with the motor windings. The impedance of this network is sufficiently high compared with the motor winding impedance to effectively remove power from the motor at the time of opening of the governor at 500 rpm. The SLOW (AH) control is used for fine tuning control about the optimum tuning point.

(c) In the mechanical connection between the drive motor and the shorting ring in the radio frequency tuner, there is a solenoid operated clutch. When the

clutch solenoid is operated, the clutch disengages. The UP (AF) switch and DOWN (AG) switch each are double-pole switches. One pole of each switch is used for drive motor control, as described in the previous paragraph, and the other pole is used for control of the clutch. If neither the UP (AF) nor the DOWN (AH) switch is operated, -24 volts after time delay is supplied through contacts 4 and 6 of S-406 and contacts 1 and 3 of S-405, through limiting resistor R-402 to the clutch solenoid, L-303 in the radio frequency tuner, disengaging the drive motor from the shorting ring. As soon as either S-405 or S-406 is operated, this circuit is broken and the clutch re-engages.

(d) To prevent damage to the equipment by running the tuning motor until the shorting ring goes to the limit of its travel and jams at either the top or bottom of the travel, a bottom limit switch, S-304, and a top limit switch, S-303, are included in the radio frequency tuner. S-304 is operated when the shorting ring reaches the top allowable limit of its travel, and S-303 operates when the bottom allowable limit is reached. Assume that the shorting ring is being moved up on the main tuning coil by virtue of having the UP (AF) switch, S-406, operated. When the top limit is reached, S-303 operates and -24 volts after time delay is applied through contacts 1 and 2 of nonoperated S-304, contacts 1 and 3 of nonoperated S-405, through limiting resistor R-402 to the clutch solenoid L-303. This will disengage the clutch, stopping the upward motion of the shorting ring even though the tuning motor remains energized. Conversely, if the shorting ring is moving down because of the DOWN (AG) switch, S-405, being operated, and the bottom limit is reached, the clutch solenoid will be energized again from -24 volts after

time delay through contacts 1 and 3 of operated bottom limit switch S-304 and contacts 1 and 2 of S-405 and limiting resistor R-402.

(e) Capacitor C-401, which is also located in the control indicator, is located in one side of the a-c line supplying the blower, B-302, in the radio frequency tuner. C-401 acts as the phase shifting capacitor required to develop driving torque for the blower.

(2) ANTENNA TRANSFER (AE) SWITCH S-402, CONTROL CIRCUIT.—The ANTENNA TRANSFER (AE) switch S-402 (figure 2-43) is a double-pole, double-throw toggle switch with an off position. The three positions are designated TUNER IN, BYPASS, and REMOTE. One pole of this switch provides the remote control for the positioning of an electromagnetic actuator, B-3502 in the antenna coupler. The second pole of S-402 controls the operation of relay K-401.

(a) The actuator, B-3502, operates from 110-volt, 60-cycle, single-phase ac, applying a rotary motion to its drive shaft. Mounted on the shaft is a positioning cam. The actuator drives the rotor of the bypass switch in the antenna coupler. A detailed explanation of the functioning of the bypass switch is contained in the section covering the antenna coupler (paragraph 17c(1)) but for the purpose of this discussion it suffices to say that, in one position of the bypass switch, the two components of the antenna tuning equipment are in the r-f transmission line, and in the other position of the switch, they are both bypassed and the antenna is connected directly to the transmitter bay of the AN/SRT-14, 15 or 16.

(b) Actuator B-3502 receives its power from the oven heater supply of the transmitter bay, this supply being uninterrupted by any of the controls of the

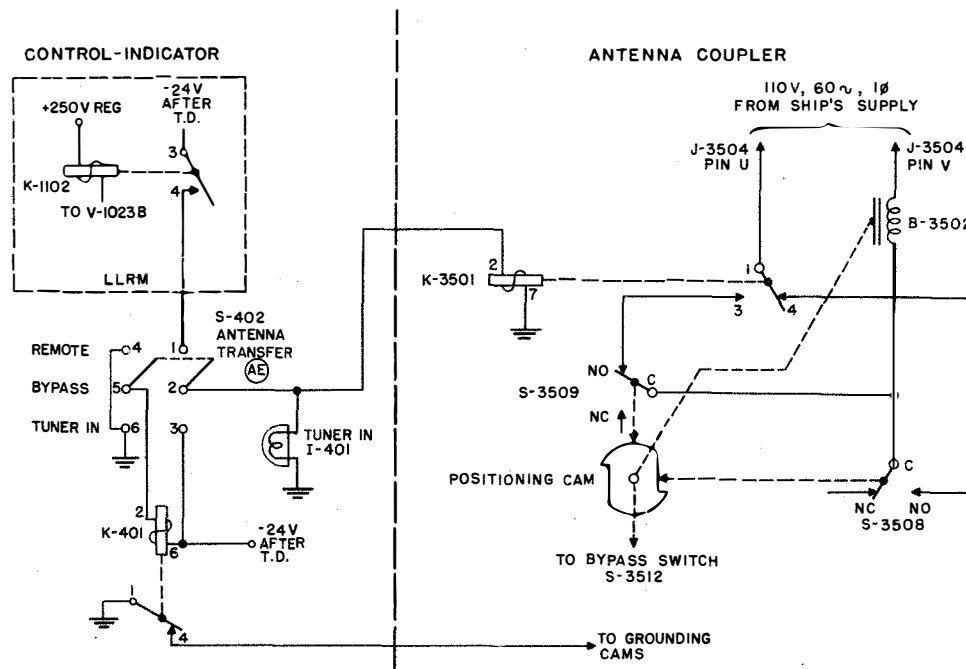


Figure 2-43. Antenna Transfer (AE) Switch S-402, Control Circuit, Simplified Schematic

AN/SRT-14, 15, and 16. One side of the supply is fed directly to the actuator winding. The other side is delivered first to the contacts of relay K-3501, and then through the contacts of either microswitch S-3509 or S-3508 to the other side of the actuator winding. The roller actuators of the two switches, S-3508 and S-3509, ride on the positioning cam.

(c) With the ANTENNA TRANSFER Ⓢ switch, S-402, in the TUNER IN position, -24 volts after time delay is supplied to relay K-3501, through contacts 2 and 3 of S-402, causing it to operate. Power is supplied to actuator B-3502 through contacts 1 and 3 of K-3501 and C of NO contacts of S-3509. The actuator will rotate until the positioning cam reaches the point where the roller of S-3509 drops into the notch of the cam, causing S-3509 to open and disrupt the power to the actuator winding. The relative mounting positions of S-3509 and the positioning cam are such that at this position of rotation of the actuator shaft, the bypass switch is in the position where the antenna tuning components are switched into the r-f line.

(d) Figure 2-43 shows the actuator in the BY-PASS position with S-3508 resting in the cam notch and S-3509 riding on the cam ring. It can be seen that if ANTENNA TRANSFER Ⓢ switch S-402 were now placed in the BYPASS position, a-c power for the actuator would be supplied through the contacts 1 and 4 of the now nonoperated K-3501 to the NO contacts of S-3508 where an open circuit exists, and the actuator would not be energized. However, if the positioning cam were in the TUNER IN position when ANTENNA TRANSFER Ⓢ switch S-402 was placed in the BYPASS position, the winding of actuator B-502 would be energized, as a circuit would now be completed through contacts NO and C of S-3508. The actuator would continue to rotate until the position of the bypass switch, where the antenna tuning equipment is switched out of the r-f line, was reached. At this point the notch in the positioning cam would be at the position of switch S-3508 and contacts NO and C would open, de-energizing the actuator winding.

(e) The third position of the ANTENNA TRANSFER Ⓢ switch, S-402, is designated REMOTE. In this position, relay K-3501 is connected to the output of the ATU bypass transfer circuit located in the low level radio modulator. A complete discussion of the function of this circuit is found in paragraph 7g. The resultant output is that when relay K-1102 is operated, -24 volts after time delay is supplied through contacts 3 and 4 of K-1102, through contacts 1 and 2 of S-402 in the REMOTE position, to relay K-3501 in the antenna coupler. This produces the same result as described in the previous paragraph when S-402 is in the TUNER IN position. When K-1102 in the low level radio modulator is not energized, the -24 volts after time delay is no longer connected to K-3501, which is the same condition as if S-402 were in the BYPASS position.

(f) When primary power is de-energized in the transmitter bay of the AN/SRT-14, 15 and 16, the source of -24 volts after time delay is also removed. Under such a condition the actuator will drive to the bypass position regardless of the setting of ANTENNA TRANSFER Ⓢ switch S-402, as relay K-3501 will not be energized. However, a-c power remains, as this source is not affected by the primary power controls of the transmitter bay.

(g) Whenever -24 volts after time delay is fed to K-3501, which is the condition for the TUNER IN position, the TUNER IN indicator, I-401, will be illuminated by the same potential to designate that the antenna tuning equipment is in the r-f transmission line.

(b) The second pole of S-402, with S-402 either in TUNER IN or REMOVE position, closes a ground circuit to the winding of relay K-401 through either contacts 5 and 6 or 4 and 5 of S-402. As the other side of the winding of K-401 is connected to -24 volts after time delay, K-401 is operated when S-402 is in either TUNER IN or REMOTE. In BYPASS position, S-402 breaks the ground circuit to K-401, and K-401 does not operate. In BYPASS, with K-401 not operated, a ground is forwarded to the grounding cams in the antenna coupler through contacts 1 and 4 of K-401. In TUNER IN and REMOTE, this ground is not present, as K-401 is operative, opening its contacts 1 and 4. The function of this ground is covered in paragraph 17c(3) concerning the antenna coupler.

(3) ANTENNA COUPLER LOADING Ⓢ SWITCH S-404 CONTROL CIRCUIT.—The ANTENNA COUPLER LOADING Ⓢ SWITCH, S-404 (figure 2-44), is a six-position selector switch whose function is to control the positioning of another actuator, B-3501, in the antenna coupler. This actuator in turn positions the loading switch in the antenna coupler. The loading switch selects the loading component that might be needed to properly tune the antenna system. A detailed description of the functioning of the loading components is found in the section covering the antenna coupler (paragraph 17c(2)).

The 110-volt, 60-cycle, single-phase, a-c supply to energize the winding of actuator B-3501 originates in the low voltage power supply and is present only when the transmitter bay is energized. One side of this supply is fed directly to one side of the actuator winding. The other side of the a-c supply is connected to the rotor contact 11 of the ANTENNA COUPLER LOADING Ⓢ switch, S-404. With S-404 in the DIRECT position, the a-c connection is fed through contact 13 of S-404, through contacts NO and C of microswitch S-3505 to the other side of the actuator winding. The actuator will rotate until the roller actuator of S-3505 falls into the notch of the positioning cam, which will open contacts NO and C of S-3505, breaking the a-c supply to the actuator. There are six positions for the actuator rotor that correspond to the six positions of the loading switch

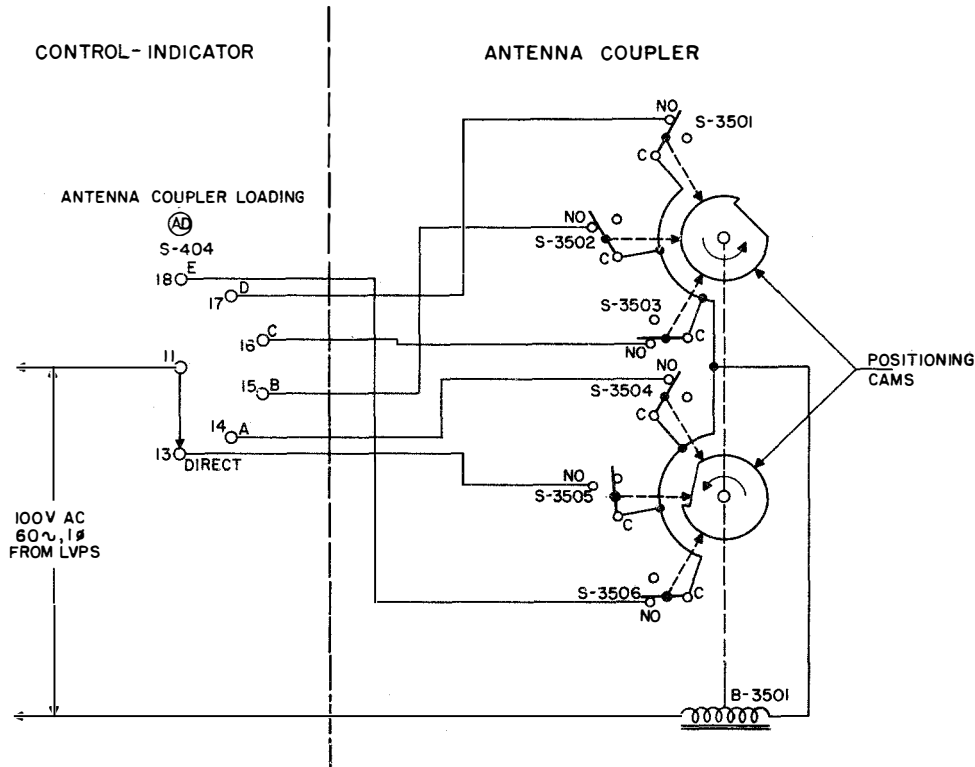


Figure 2-44. Antenna Coupler Loading (AD) Switch S-404, Control Circuit, Simplified Schematic

that the actuator drives. For convenience of the mounting of the six positioning microswitches, S-3501 through S-3506, two positioning cams are employed. Table 2-14 shows the various positions of S-404 and the positioning microswitch in the antenna coupler that is employed for each position of S-404.

TABLE 2-14. FUNCTIONS OF ANTENNA COUPLER LOADING (AD) SWITCH S-404

| POSITION OF S-404 | POSITION MICROSWITCH EMPLOYED |
|-------------------|-------------------------------|
| DIRECT | S-3505 |
| A | S-3504 |
| B | S-3502 |
| C | S-3503 |
| D | S-3501 |
| E | S-3506 |

(4) TRANSFORMER (AC) SWITCH S-403 CONTROL CIRCUIT.—TRANSFORMER (AC) switch S-403 (figure 2-45) functions in the same manner as ANTENNA COUPLER LOADING (AD) switch S-404, described in the previous paragraph. S-403 controls the position of actuator B-303 in the radio frequency tuner; B-303 in turn positions the transformer switch in the tuner that connects or removes an impedance transformer in series with the r-f transmission line. The requirement of the impedance transformer is discussed in paragraph 17b(2).

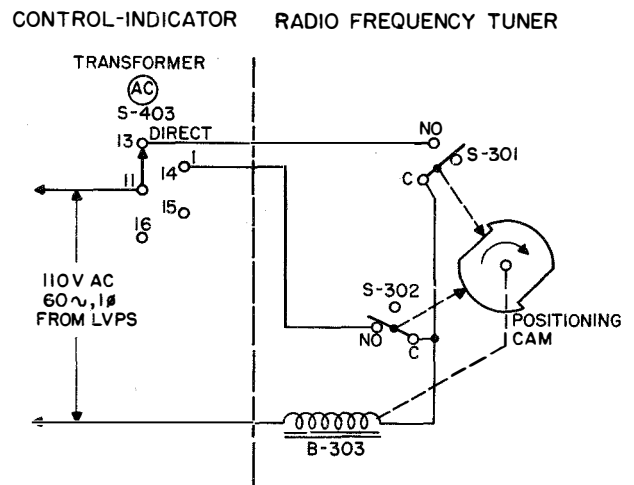


Figure 2-45. Transformer (AC) Switch S-403, Control Circuit, Simplified Schematic

With S-403 in the DIRECT position, one side of the 110-volt, a-c line is fed through contacts 11 and 13 of S-403, through the contacts NO and C of S-301 to one side of the winding of actuator B-303. The other side of the actuator is connected directly to the other side of the a-c line. B-303 now rotates until the roller actuator of S-301 falls into the notch of the positioning cam, at which point the NO and C contacts of S-301 open, breaking the ac. The transformer switch, S-308, which is driven by B-303, is now in the position where the im-

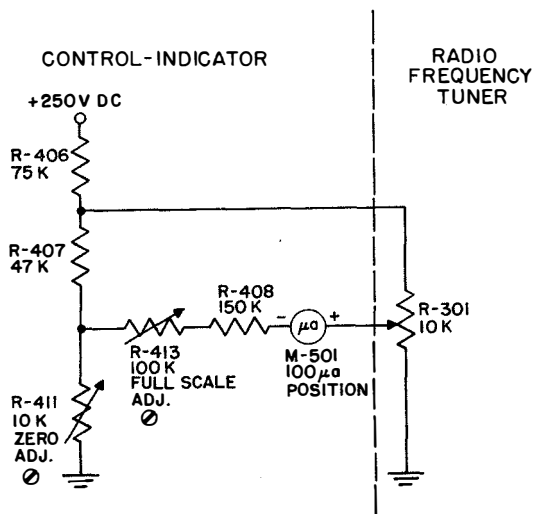


Figure 2-46. Position Indicator Circuit, Simplified Schematic

pedance transformer is not in the circuit. Placing S-403 in the 1 position will again energize B-301 through S-302, and B-303 will rotate until the actuator for S-302 falls in the notch of the positioning cam. This corresponds to the position of S-308 where the impedance transformer is in the circuit.

(5) POSITION INDICATOR CIRCUIT.—The POSITION indicator, M-402 (figure 2-46), gives an indication of the position of the shorting ring on the main tuning coil of the radio frequency tuner. To accomplish this a potentiometer, R-301 in the tuner, is geared to the same drive mechanism in the tuner that positions the shorting ring. The gear ratio is such that full excursion of the shorting ring will produce about 70 percent of full rotation of R-301. R-301 is part of a voltage divider network from +250 volts dc to ground, comprised mainly of R-406, R-407, R-411, and R-301. The values are such that the potential at the high end of R-301 is about +25 volts, with the low end grounded. As R-301 only travels 70 percent of its full rotation, when the shorting ring is driven to the top limit of its travel, the arm of R-301, which is connected to one side of POSITION meter M-402, will be at about +21 volts. When the ring is at the bottom limit, the arm of R-301 will be about +4 volts. With the arm of R-301 at the low limit, the value of R-411 is adjusted so the potential at the junction of R-407, R-411, and R-413 is the same as at the arm of R-301 (approximately +4 volts), at which point no current will flow through M-301, and the indication will be zero. With the arm of R-301 at the high end of the travel, there will be a potential of approximately 17 volts across the combination of limiting resistors R-413, R-408, and M-301. R-413 is adjusted for full-scale reading on M-301. By making both the low-scale and high-scale adjustments, accurate positioning of the shaft of R-301 with respect to the traverse of the shorting ring is eliminated, it being necessary only to ensure the total traverse lies between the limit stops of the potentiometer. Both R-411 and

R-413 are screw-driver adjustments on the front panel of the control indicator and are designated ZERO ADJ and FULL SCALE ADJ respectively.

(6) SWR INDICATOR CIRCUIT.—The SWR indicator circuit (figure 2-47) is used in conjunction with voltages supplied to it from the SWR monitor circuit, which is a component of the load adjusting unit (see paragraph 15b). The input to the SWR indicator circuit from the SWR monitor consists of two voltages of opposite polarity, one proportional to the voltage of the "reflected" wave and the other proportional to the "incident" wave as measured on the r-f output line of the transmitter. Across the input there is a tapped divider consisting of R-410, R-415, R-414, and R-412. The values of these components are such that if the standing wave on the r-f line is 8:1, the potential at the junction of the R-410 and R-415 is zero; accordingly, the 8:1 position of the SWR CALIBRATE switch, S-408, is connected to this point and the SWR BALANCE meter, M-401, would be at the center null position. If the standing-wave ratio is less than 8:1, with S-408 set at the 8:1 position, the SWR BALANCE meter M-401 will read to the left of the null position (green area) and, conversely, if the ratio is higher than 8:1, M-401 will read to the right of the null position (red area). Similarly, the voltage at the junction of R-415 and R-414 will be zero when the standing-wave ratio is 4:1. With the SWR CALIBRATE switch, S-408, set at the 4:1 position, M-401 will again read at the center null position for a value of 4:1 SWR. A 2:1 value of standing-wave ratio will give a zero potential at the junction of R-414 and R-412; consequently, the 2:1 position of S-408 is connected to this point. R-416 is a limiting resistor of sufficient size to limit the current flowing through M-401 to a value below its safe limit value of 5 ma when the transmitter is in 500-watt operation. R-409 is the damping resistor for M-401. S-408 has an OFF position that disconnects the SWR BALANCE meter, M-401, from the circuit.

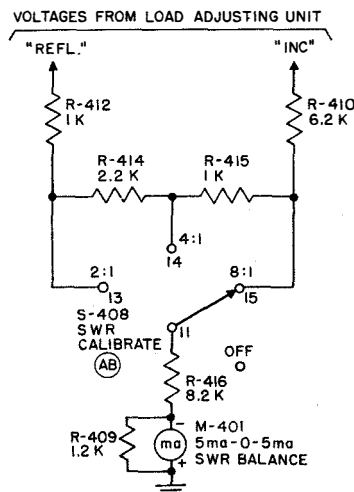


Figure 2-47. SWR Indicator Circuit, Simplified Schematic

r. **CONTROL OF FREQUENCIES.**—The set-up of frequencies in the RFO can be accomplished manually by a series of nine control knobs, located behind a transparent door on the front panel of the RFO. These controls are designated as follows: **AA** KNOB control, **BB** KNOB control, **BAND** control knob **FF**, **MC** control knob **GG**, **100 KC** control knob **HH**, **10 KC** control knob **JJ**, **KC** control knob **CC**, **100~** control knob **DD**, and **10~** control knob **EE**.

(1) MECHANICAL LINKAGES.—The control knobs are mechanically connected to shafts of the corresponding rotary switches in the RFO subunits by employing a system of chain drives. The mechanical linkages employed are shown in figures 2-48 through 2-54. The **10~** control knob **EE**, the **100~** control knob **DD**, and the **KC** control knob **CC** are mounted directly on the shafts of the **10~** step switch, S-2053, the **100~** step switch, S-2052, and the **1-kc** step switch, S-2051, respectively, located in unit 3. The **10 KC** control knob **JJ** is connected by a chain to the shaft of the **10-kc** step switch, S-2201, located in unit 6. The **100 KC** control knob **HH** is connected by a chain to a shaft on which is mounted the **100-kc** step switch, S-2326 in unit 8. This shaft, in turn, mounts a continuous chain that drives two additional shafts. On the first of these shafts is mounted the **100-kc** step switch, S-2427 in unit 9; on the second, the **100-kc** step switch, S-2652 in unit 11B, and the **100-kc** step switch, S-2802 in unit 11C, are mounted. The **MC** control knob **GG** is chain-connected to a shaft on which **1-mc** step switch S-2651 in unit 11B and **1-mc** step switch S-2801 in unit 11C are mounted. **BAND** control knob **FF** chain-drives the shaft of band-switch S-2996 located on unit 14. **BB** KNOB control chain-drives the shaft of **1-mc** step switch S-2526 in unit 10. **AA** KNOB control is chain-connected to a shaft connected to unit 9, where this shaft, in turn, is chain-connected to the shaft of the **5-mc** step switch, S-2426.

(2) MECHANICAL SELECTION OF A FREQUENCY.—To set up a frequency, the above-mentioned control knobs permit the manual selection of any frequency in 10-cycle steps between 0.3 mc to 26 mc. The dial reading corresponding to the **100 KC** control knob **HH** down through the **10~** control knob **EE** designates directly the significant figures of the frequency setting through the **100 KC** setting. The selection of the correct megacycle setting requires the regulating of the **AA** KNOB control, the **BB** KNOB control, the **BAND** control knob **FF**, and the **MC** control knob **GG**. **AA** and **BB** select the frequency of the outputs of units 9 and 10 respectively according to the megacycle setting of the frequency desired. The outputs of units 9 and 10 are fed to unit 11A or 11B or 11C as determined by the proper setting of the bandswitch S-2996 controlled by **BAND** control **FF**. The **MC** control knob **GG** controls the tuning in units 11B and 11C. The following table shows the settings of **AA**, **BB**, **FF**, and **GG** according to the megacycle value of the RFO output frequency. In all instances the positions of the control knobs correspond to the positions of switches they control.

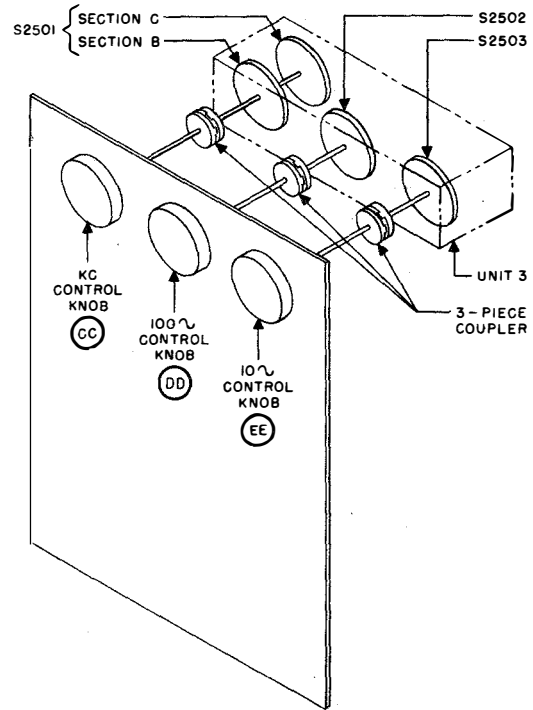


Figure 2-48. 10~ EE, 100~ DD, KC CC Controls, Mechanical Linkages

TABLE 2-15. FINAL OUTPUT FREQUENCIES AND AA, BB, FF, AND GG CONTROL POSITIONS

| RFO OUTPUT FREQ (mc) | AA CONTROL POSITION | BB CONTROL POSITION | FF CONTROL POSITION | GG CONTROL POSITION |
|----------------------|---------------------|---------------------|---------------------|---------------------|
| 0.3-1 | 0 | 10 | 0.3-6 mc | * |
| 1-2 | 0 | 9 | | * |
| 2-3 | 0 | 8 | | * |
| 3-4 | 0 | 7 | | * |
| 4-5 | 0 | 6 | | * |
| 5-6 | 1 | 10 | | * |
| 6-7 | 0 | 4 | 6-16 mc | 6 |
| 7-8 | 1 | 8 | | 7 |
| 8-9 | 0 | 3 | | 8 |
| 9-10 | 0 | 2 | | 9 |
| 10-11 | 1 | 5 | | 0 |
| 11-12 | 1 | 4 | | 1 |
| 12-13 | 2 | 8 | | 2 |
| 13-14 | 2 | 7 | | 3 |
| 14-15 | 2 | 6 | | 4 |
| 15-16 | 3 | 10 | | 5 |
| 16-17 | 3 | 9 | 16-26 mc | 6 |
| 17-18 | 3 | 8 | | 7 |
| 18-19 | 2 | 3 | | 8 |
| 19-20 | 1 | 1 | | 9 |
| 20-21 | 3 | 5 | | 0 |
| 21-22 | 3 | 4 | | 1 |
| 22-23 | 0 | 1 | | 2 |
| 23-24 | 3 | 3 | | 3 |
| 24-25 | 3 | 2 | | 4 |
| 25-26 | 2 | 0 | | 5 |

* In the 0.3- to 6-mc band the position of **GG** is immaterial.

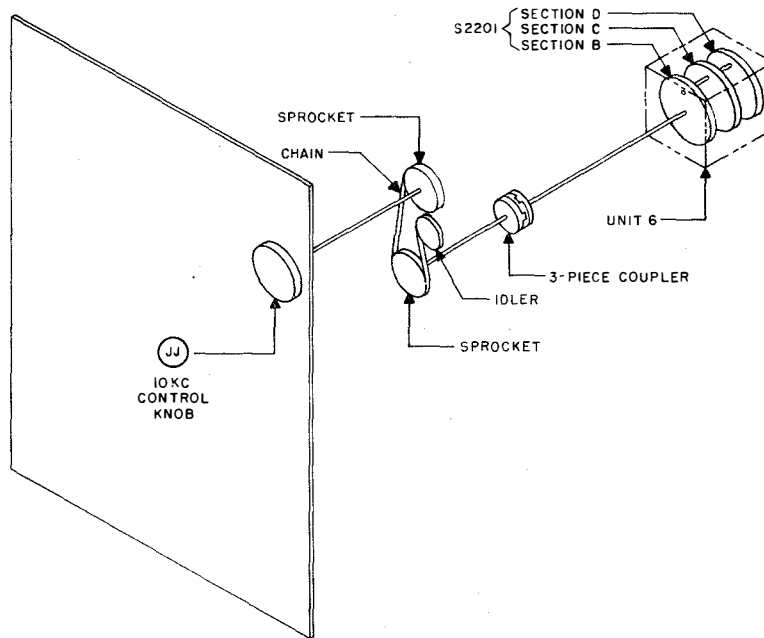


Figure 2-49. 10 KC JJ Control, Mechanical Linkages

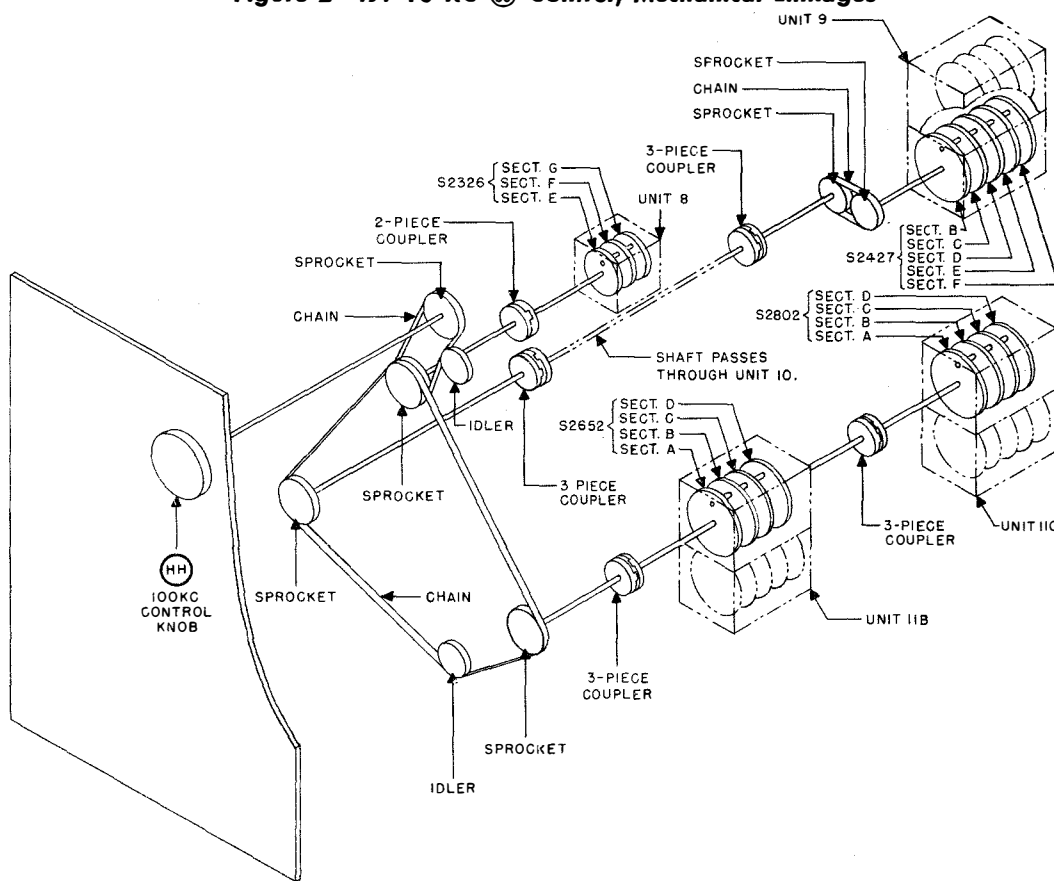


Figure 2-50. 100 KC HH Control, Mechanical Linkages

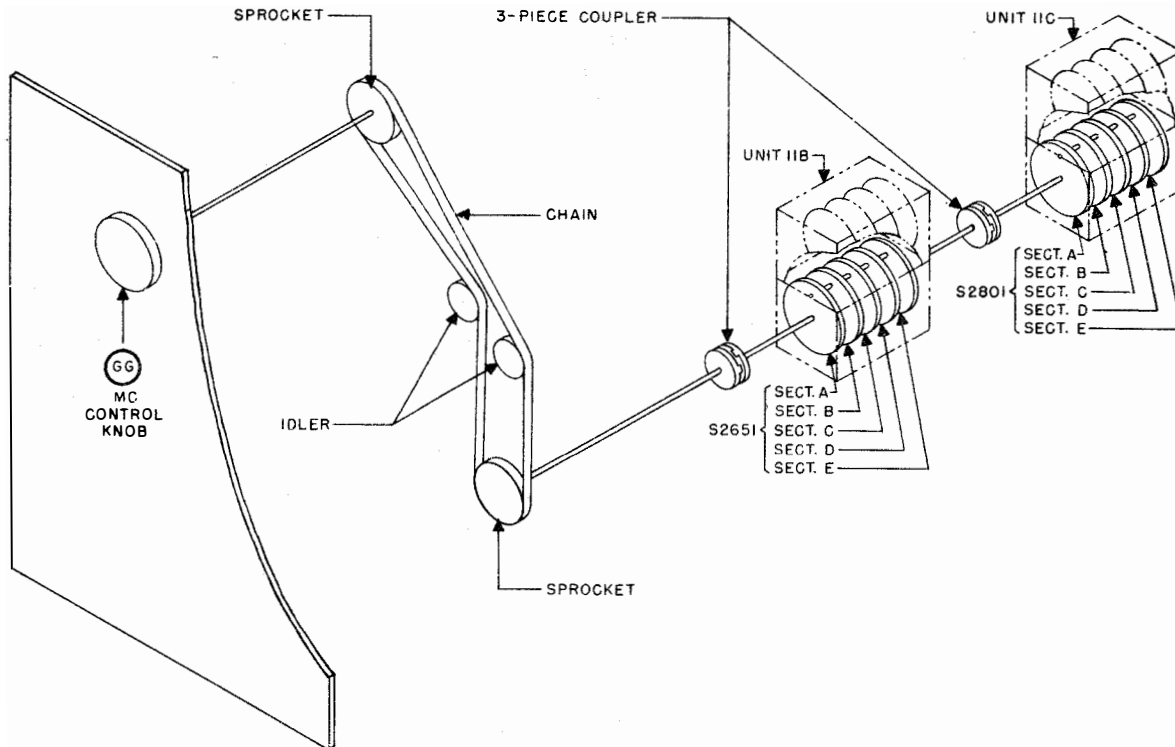


Figure 2-51. MC GG Control, Mechanical Linkages

(3) PRODUCTION OF A SAMPLE FREQUENCY.—To illustrate the operation of the subunits and the controls of the RFO, assume a sample frequency of 23.57619 mc is desired at the RFO output (figure 2-131).

(a) MANUAL OPERATION.—The first step in setting up a new frequency is to open the transparent door covering the control knobs. Opening this door also opens the door switch S-2920, which restores the transmitter output to the 100-watt level if transmission was taking place at the 500-watt level when the transparent door was opened (see paragraph 10e(1)). For the sample frequency of 23.57619 mc, the 10~ control knob EE is set at 9, the 100~ control knob DD at 1, the KC control knob CC at 6, 10 KC control knob JJ at 7, and the 100 KC control knob HH at 5. So far, these settings have determined the output frequency through the 100-kc level. As described in the previous paragraph, controls AA , BB , FF , and GG must be set to determine the megacycle value of the output frequency. To set up 23 mc, table 2-15 shows that AA should be set at 3, BB at 3, FF at 16-26 mc, and GG at 3. The above setting of the nine controls has now completed the selection of the sample frequency of 23.57619 mc after which the transparent door is closed, restoring the door switch, S-2920.

Note

To set up the highest frequency (26 mc), the control knobs must be set for 25, 999, 9910 with the 10~ control knob EE in the 10 position.

(b) SUBUNIT FUNCTIONING.—The crystal oscillator (unit 1) produces a 100-kc signal that is delivered to units 2, 5, 6, and 8 (figure 2-131). The frequency multiplier (unit 2) receives this 100-kc output and produces a 1-mc signal that is delivered to units 4, 5, 6, 7, and 10. The frequency multiplier (unit 4) receives this 1-mc signal and produces an 8-mc signal that is delivered to unit 5. The frequency converter (unit 5) contains three mixers, an amplifier, and filters. The 1-mc signal from unit 2 and the 100-kc signal from unit 1 (in c-w operation) are delivered to the first mixer and filter. (In frequency-shift and facsimile operation, the 100 kc delivered to the first mixer in unit 5 is taken from unit 12 rather than from unit 1, and varies by a frequency $(\pm \frac{\Delta f}{2}$ for FSK or $+\Delta f$ for FAX).) The

1-mc and 100-kc signals are added in the first mixer of unit 5, and the 1.1-mc sum is fed to the second mixer and filter. The output of unit 3 is also fed to the second mixer in unit 5. This output can be varied from 90 to 100 kc in 1-kc, 100-cps, and 10-cps steps by 1-kc step switch S-2051, 100-cps step switch S-2052, and 10-cps step switch S-2053. For a sample frequency of 23.57619 mc, S-2051 is in position 6, S-2052 in position 1, and S-2053 in position 9, and the output of unit 3 is therefore 96.19 kc. The 1.1-mc and 96.19-kc signals are added in the second mixer and the sum, 1.19619 mc, is fed to the third mixer in unit 5. The third mixer in unit 5 also receives an 8-mc signal from unit 4. These two signals (1.19619 mc and 8 mc) are added in the third mixer, and the sum, 9.19619 mc, is fed to the second mixer in unit 6.

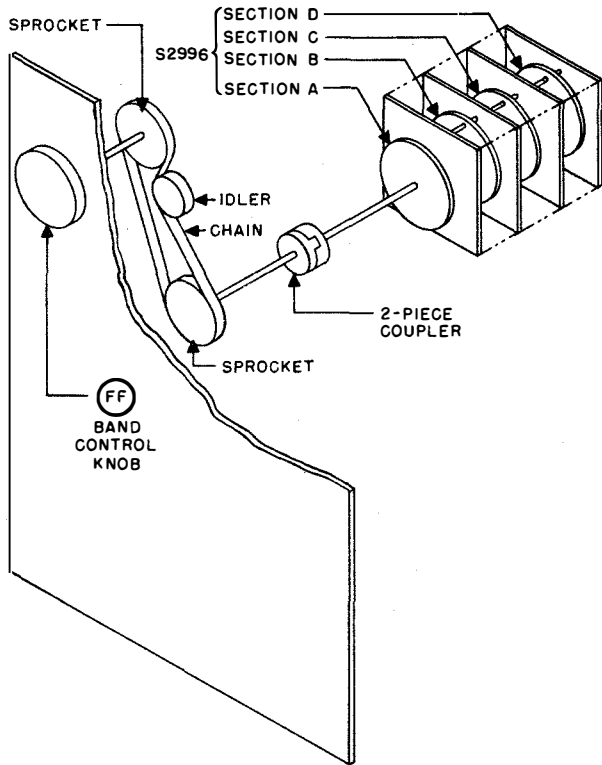


Figure 2-52. BAND FF Control, Mechanical Linkages

The 10-kc step generator (unit 6) contains a divider circuit, a phase-locked oscillator, two mixers, filters, and amplifiers. Unit 1 delivers 100 kc to the divider, whose output of 10 kc is fed to the phase-locked oscillator for synchronization. The output of this oscillator can be varied from 210 to 300 kc in 10-kc steps by 10-kc step switch S-2201. For the sample frequency 23.57619 mc, S-2201 is in position 7, and the 280-kc output of the oscillator is fed to the first mixer in unit 6. This mixer also receives a 1-mc signal from unit 2, and the sum, 1.28 mc, is fed to the second mixer in unit 6. The second mixer also receives 9.19619 mc from unit 5 and adds these two signals. The sum, 10.47619 mc, is fed to amplifiers and filters in unit 6, and then delivered to the second mixer in unit 8.

The 100-kc step generator (unit 8) contains a phase-locked oscillator, two mixers, filters, and amplifiers. Unit 1 delivers 100 kc to the phase-locked oscillator for synchronization. The output of this oscillator can be varied from 1.6 to 2.5 mc in 100-kc steps by 100-kc step switch S-2326. For the sample frequency 23.57619 mc, S-2326 is in position 5 and the 2.1-mc output of the oscillator is fed to the first mixer in unit 8. This mixer also receives a 15-mc signal from the frequency multiplier (unit 7) and the sum, 17.1 mc, is fed to the second mixer in unit 8. The second mixer also receives 10.47619 mc from unit 6, and the sum, 27.57619 mc, is fed to amplifiers and filters in unit 8 and then to the mixer in unit 9.

The frequency converter (unit 9) contains a mixer, amplifiers, filters, and two step switches. The mixer receives 27.57619 mc from unit 8 and 5 megacycles from unit 7. Step switch S-2426, which is set by the AA KNOB control, determines whether the signal from unit 8 is increased or decreased by the 5-mc output of unit 7 or increased by the second harmonic (10 mc) of this output, or remains unchanged. For the sample frequency, 23.57619 mc, S-2426 is in position 3, and the second harmonic (10 mc) of the 5-mc signal from unit 7 is added to the output of unit 8. The sum, 37.57619 mc, is fed to amplifiers and filters in unit 9 and then to one section of the bandswitch, S-2996. It should be noted that the 100-kc step switch, S-2427 in unit 9, always takes the same position as the 100-kc step switch, S-2326 in unit 8, as they are both controlled by the 100 KC control knob AA . In this case, it is in position 5.

The 1-mc step generator (unit 10) contains a harmonic generator, amplifiers, filters, and 1-mc step switch S-2526. The harmonic generator receives 1 megacycle from unit 2 and can produce 1 of 11 frequencies (7, 8, 13, 14, 16, 17, 18, 19, 20, 21, or 22 mc) as determined by the position of S-2526, which is set by the BB KNOB control. For sample frequency 23.57619 mc, S-2526 is in position 3, and the 14-mc output of the harmonic generator is delivered to the amplifiers and filters and then to another section of bandswitch S-2996.

Bandswitch S-2996 determines to which frequency converter chassis (unit 11A, 11B, or 11C) the signals from units 9 and 10 are delivered and from which chassis the final r-f output is taken. For 23.57619 mc, these signals are delivered to unit 11C, as this frequency is in

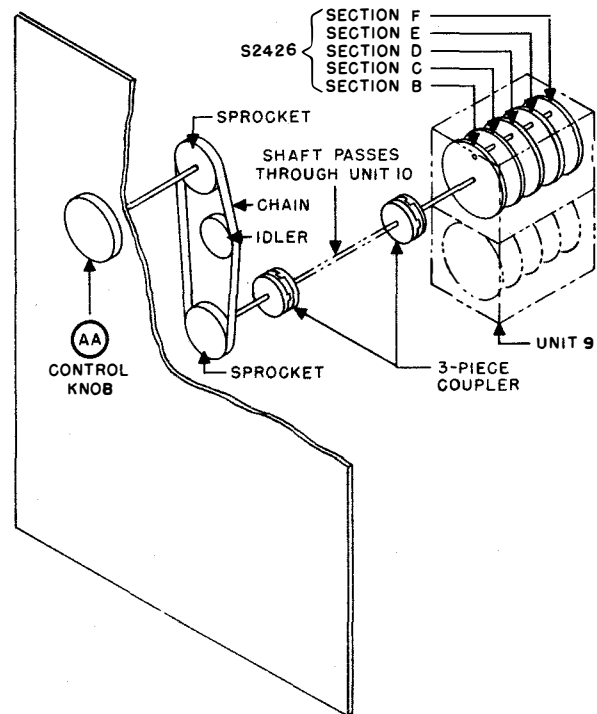


Figure 2-53. AA Control, Mechanical Linkages

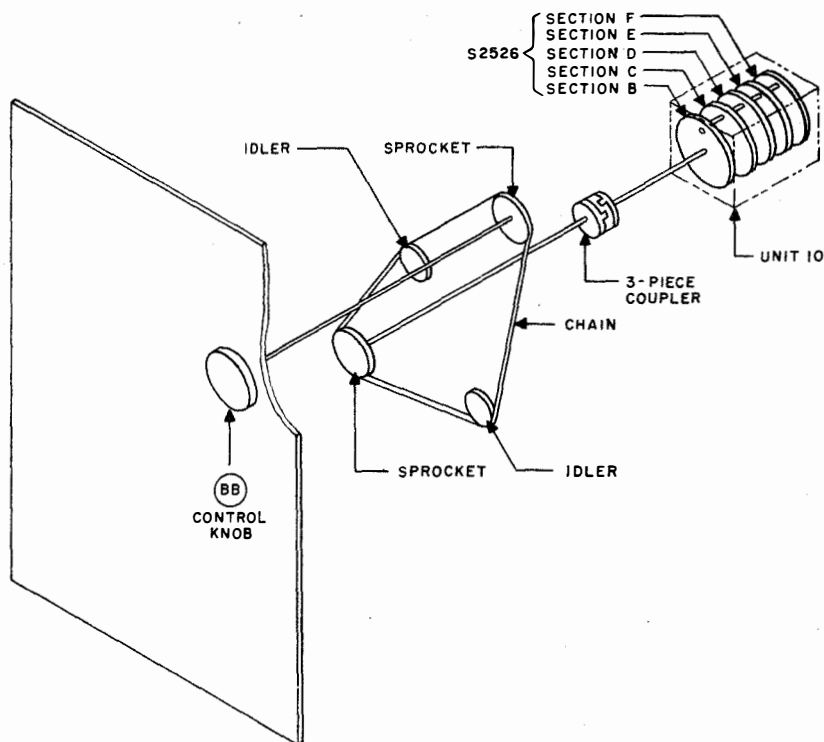


Figure 2-54. ⓑ Control, Mechanical Linkages

the 16- to 26-mc band. The 14-mc signal from unit 9 is subtracted from the 37.57619-mc signal from unit 10 in the mixer in unit 11C. The difference, 23.57619 mc, is fed through amplifiers, filters, and a third section of S-2996 to the RFA. The frequency converter (unit 11C) has two step switches, S-2801 and S-2802. S-2801 is ganged to S-2651 in unit 11B, and both are set by the MC control knob ⓑ, which is in position 3 for the sample frequency. S-2802 and S-2652 in unit 11B are ganged together and are set by the 100 KC control knob ⓓ, which is in position 5 for the sample frequency. Unit 11A is used for frequencies between 0.3 and 6 megacycles; unit 11B for frequencies between 6 and 16 mc; and unit 11C for frequencies between 16 and 26 mc as determined by the range of tuning of the filter circuits in the respective units.

3. POWER SUPPLIES.

The low voltage power supply (LVPS), medium voltage power supply (MVPS), and high voltage power supply (HVPS) provide a major portion of the power required to operate the transmitter bay of Radio Transmitting Sets AN/SRT-14, 15 and 16. The LVPS receives single-phase power delivered to the transmitter bay from the ship's supply. Input single-phase power must be 110 volts ac, 60 cycles. The HVPS (part of AN/SRT-15 and 16) receives all three-phase power delivered to the transmitter bay. This input power may be either 220 or 440 volts ac, 60 cycles, three phase.

4. POWER SUPPLY PP-1094/SRT (LOW VOLTAGE POWER SUPPLY, LVPS).

a. GENERAL.—The LVPS receives 110-volt a-c, 60-cycle, single-phase power from the ship's supply. The LVPS, in turn, delivers 110-volt a-c, 60-cycle, single-phase power to the MVPS, the radio frequency oscillator (RFO), the low level radio modulator (LLRM), the radio frequency amplifier (RFA), and the mounting. The LVPS also supplies the following d-c voltages: +250 volts to the RFO, +300 volts to the RFA and LLRM, -220 volts to RFA and LLRM, and -24 volts for motor and control circuit functions.

b. INPUT CIRCUIT.—The input circuit of the LVPS (figure 2-55) receives 110-volt a-c, 60-cycle, single-phase power through receptacle J-3003, where five sets of contacts in parallel are used to insure adequate current-carrying capacity. EMERGENCY SWITCH ⓓ S-3001 controls all power to the LVPS. When switch S-3001 is closed, power is applied through fuses F-3007 and F-3008 to the start-stop circuit and through fuses F-3005 and F-3006 to the main power transformer. Power is also applied through fuses F-3001 and F-3002 and CABINET HEATER switch ⓓ S-3002 to the space heaters in the mounting, the presence of voltage across the space heaters being indicated by CABINET HEATER indicator light I-3003. (In an AN/SRT-16 installation, the heaters of the two transmitter groups are individually energized by the CABINET HEATER switches in each group.) In addition, a fused 100-volt a-c, 60-cycle, single-phase line, through fuses F-3003 and F-3004, is supplied.

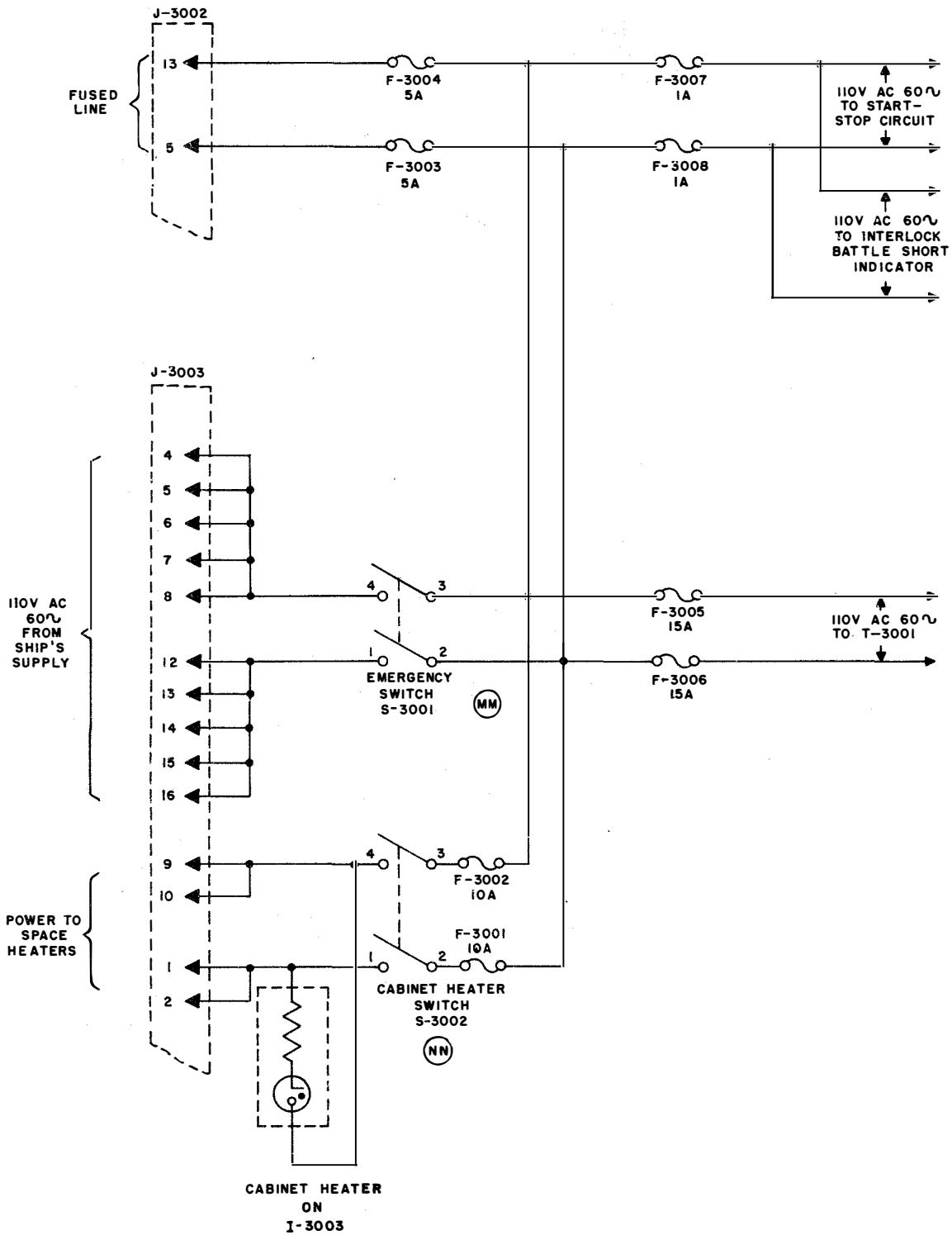


Figure 2-55. Input Circuit of LVPS, Simplified Schematic

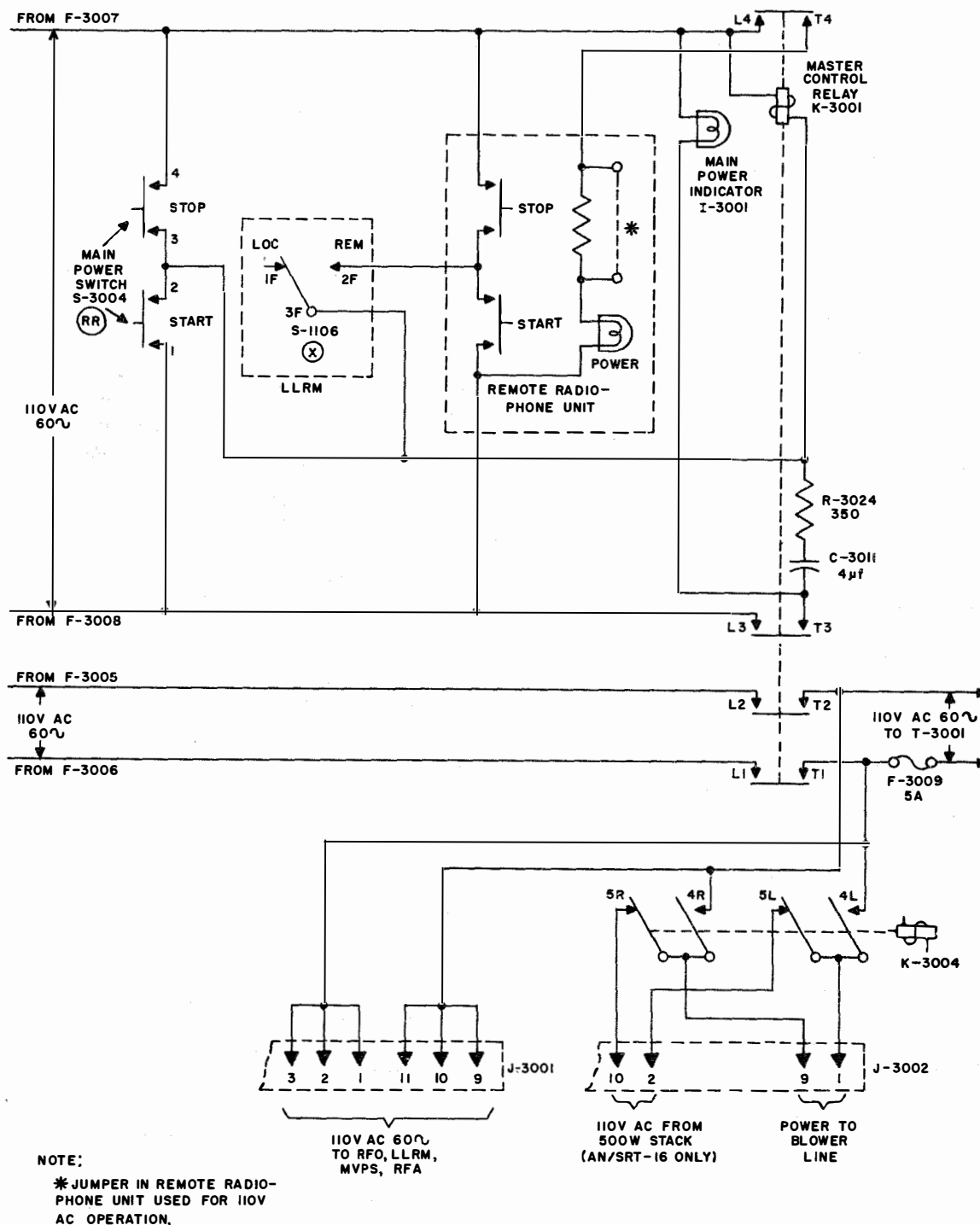


Figure 2-56. Start-Stop Circuit, Simplified Schematic

c. START-STOP CIRCUIT.—The start-stop circuit (figure 2-56) in the LVPS controls power to the transmitter bay. When EMERGENCY SWITCH (Ⓜ) S-3001 is closed, power is applied throughout the transmitter bay by depressing the START push button on the MAIN POWER switch (Ⓡ), S-3004. The master control relay, K-3001, is connected across the line through the closed contacts of the START push button and through the

LOCAL position of the LOCAL-REM. switch (ⓧ), S-1106, which is located in the LLRM. When K-3001 energizes, contacts L3 and T3 close, so that, when the START button is released, resistor R-3024 and capacitor C-3011 are added in series with the winding of K-3001 across the line. The combination of R-3024 and C-3011 provides a series impedance with the winding of K-3001, with power factor correction sufficient to in-

sure adequate holding current flowing through K-3001 during the "power on" condition. The MAIN POWER INDICATOR light, I-3001, is also connected across the line through contacts L3 and T3 of K-3001.

Contacts L1, T1 and L2, T2 of energized relay K-3001 apply 110 volts ac to main power transformer T-3001, RFO, LLRM, MVPS, RFA, antenna coupler, and contacts 4L and 4R of K-3004. T-3001 is protected by fuse F-3009. K-3004 is energized after the -24-volt time delay (paragraph 4d), which applies 110-volt a-c power through contacts 4L, 3L and 4R, 3R to the blower motors in the mounting. In the AN/SRT-16, it is necessary that the blowers in both mountings be energized when either the right or left transmitter group, or both, are on. In right transmitter group operation or with both groups in operation, the blowers in both groups, which are paralleled, receive power as described above. In left group operation only, K-3004 in the right group is not energized and the blowers now receive power from the left group LVPS through contacts 4L, 3L and 4R, 3R of K-3004 in the left group and contacts 5L, 6L and 5R, 6R of K-3004 in the right group.

If a remote radiophone unit is employed, contacts L4, T4 of energized K-3001 connect the line across the POWER indicator. This indicates that the master control relay in the LVPS is energized, with the transmitter group either in local or remote operation. The voltage-dropping resistor in series with the POWER indicator is shorted out for 110-volt operation. For remote operation of the transmitter group, the LOCAL-REM. switch (X), S-1106 in the LLRM, is placed in the REM. position, which puts the master control relay in the LVPS under control of the START-STOP switch on the radiophone unit instead of the MAIN POWER-START-STOP switch on the LVPS.

To shut down the transmitter group, the STOP button of the MAIN POWER switch (R), S-3004, is depressed, which puts a short across K-3001, de-energizing it. Depressing the STOP button does not place a short across the line because of the presence of R-3024 and C-3011. De-energizing K-3001 opens its holding contacts L3, T3; opens contacts L1, T1 and L2, T2 which removes power from T-3001, RFO, LLRM, RFA, MVPS, antenna coupler, and the blower motors, and opens contacts L4, T4, which extinguishes the POWER indicator in the radiophone unit. The opening of contacts L3, T3 also extinguishes MAIN POWER INDICATOR I-3001.

d. INTERLOCK CIRCUIT AND -24-VOLT D-C SUPPLY.—The -24-volt d-c supply is taken from the secondary terminals 4 and 6 (48 volts rms) of T-3001, through the full-wave metallic rectifier, CR-3001, and is filtered by C-3001, C-3002, and R-3007. This supply is returned to ground through fuse F-3010 and center-tap terminal 5 of T-3001. (See figure 2-57.)

The output of the filtered -24-volt supply is fed to the time delay relay, K-3003, through the interlocks of the LVPS, MVPS, RFA, LLRM, RFO and, in the AN/SRT-15 and AN/SRT-16, the HVPS and HLRM. All

interlocks are similar to the interlock in the LVPS shown in detail in figure 2-57. As the chassis of any major unit in the transmitter group in the AN/SRT-14, 15 and 16 may be pulled out without disconnecting the chassis from the cabinet wiring, the interlock switch, S-3006, is a drawer interlock. When the chassis is completely seated in the cabinet, this interlock is shorted. If the plug of the cabinet wiring is correctly mated to the cabinet wiring receptacle, the circuit will be advanced through all the interlocks and return to K-3003. The drawer interlock may be shorted out when the chassis is in the "out" position by means of a push button incorporated in the interlock. As a protective measure, this push button is manually restored when the chassis is resealed in the cabinet. The INTERLOCK BATTLE SHORT (U), S-3007, bypasses the drawer interlocks when it is in the ON position by connecting the output of the filtered -24-volt supply directly to the time delay relay. When S-3007 is ON, the INTERLOCK BATTLE SHORT indicator, I-3007, is energized by 110 volts ac, through the closed contacts of S-3007. Receptacle J-3007 and J-3008, designated INT. TEST, are provided to test the continuity of the interlocks by measuring with the probes of a standard test ohmmeter.

WARNING

The INTERLOCK BATTLE SHORT (U), S-3007, should be used as an emergency measure only. Before any major unit chassis is removed from the cabinet, the INTERLOCK BATTLE SHORT (U) should be thrown to OFF. Failure to do this will mean that the normal action of the drawer interlock will be bypassed and the equipment can be energized with the chassis in the "out" position.

The filtered -24-volt supply is delivered through the interlocks or battle shorts to the motor and clutch of the time delay relay, K-3003. After approximately 30 seconds, K-3003 operates its contacts, which supplies the voltage described as "-24 volts after T.D." Through contacts 1C and 1A this supply is delivered first to the "push to turn" switch, S-1383, on the bandswitch of the RFA, from where it is fed to RFA, LLRM, MVPS and returned to the LVPS (and to HLRM and HVPS in the AN/SRT-15, 16). Operating the bandswitch while the transmitter is on will momentarily open "-24 volts after T.D.," which, in turn, de-energizes the control circuits and takes the transmitter off the air. When contacts 1C and 1B of K-3003 open, the motor is de-energized, but the clutch remains energized, holding the motor shaft in the energized position. The "-24 volts after T.D." energizes relay K-3004 whose contacts complete the circuits for the +300-, +250- and -220-volt supplies as well as applying 110-volt a-c power to the blower motors in the mounting. When STANDBY-OPERATE switch (P) S-3005 is in the OPERATE position, "-24 volts

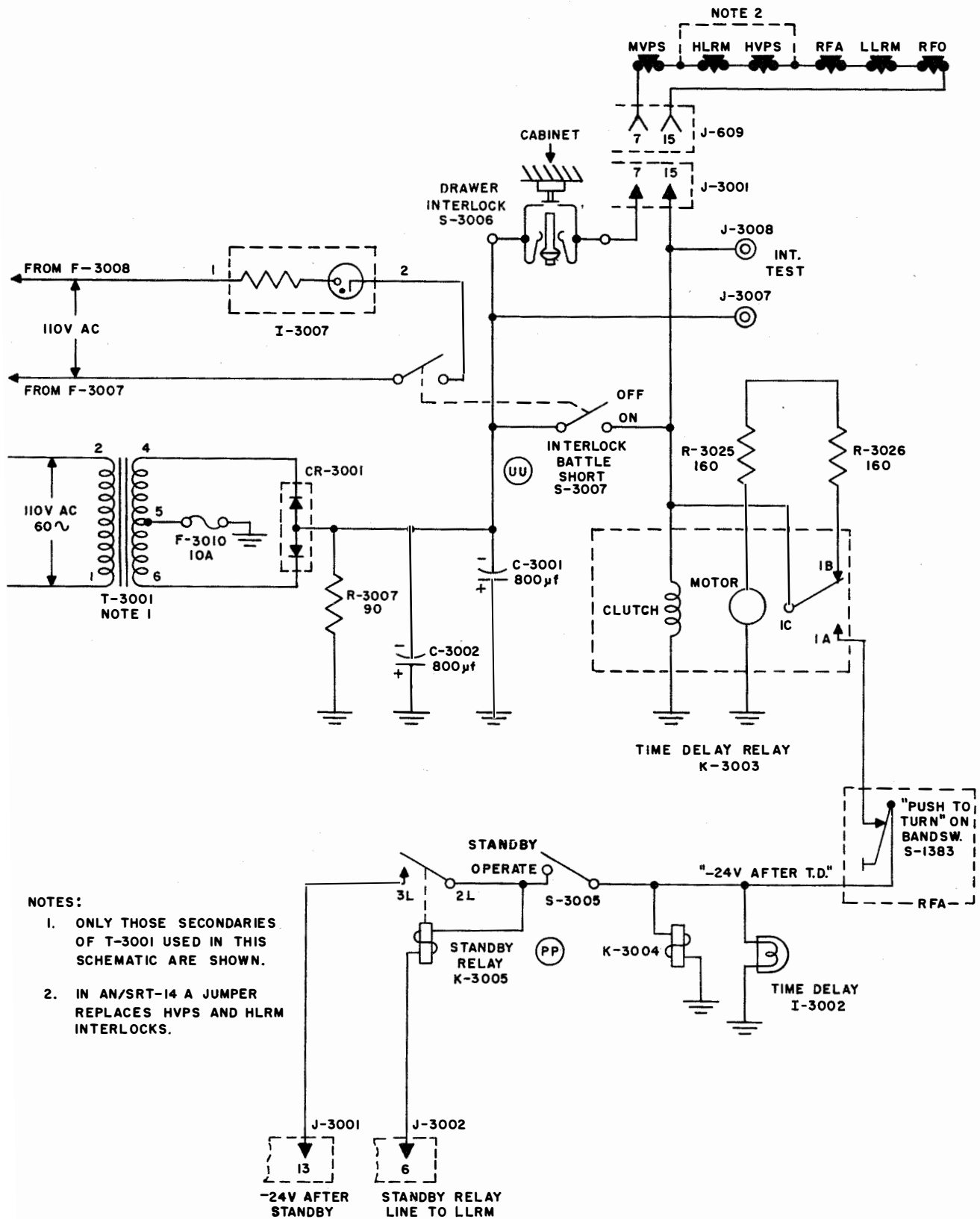


Figure 2-57. Interlock Circuit and -24-Volt D-C Supply, Simplified Schematic

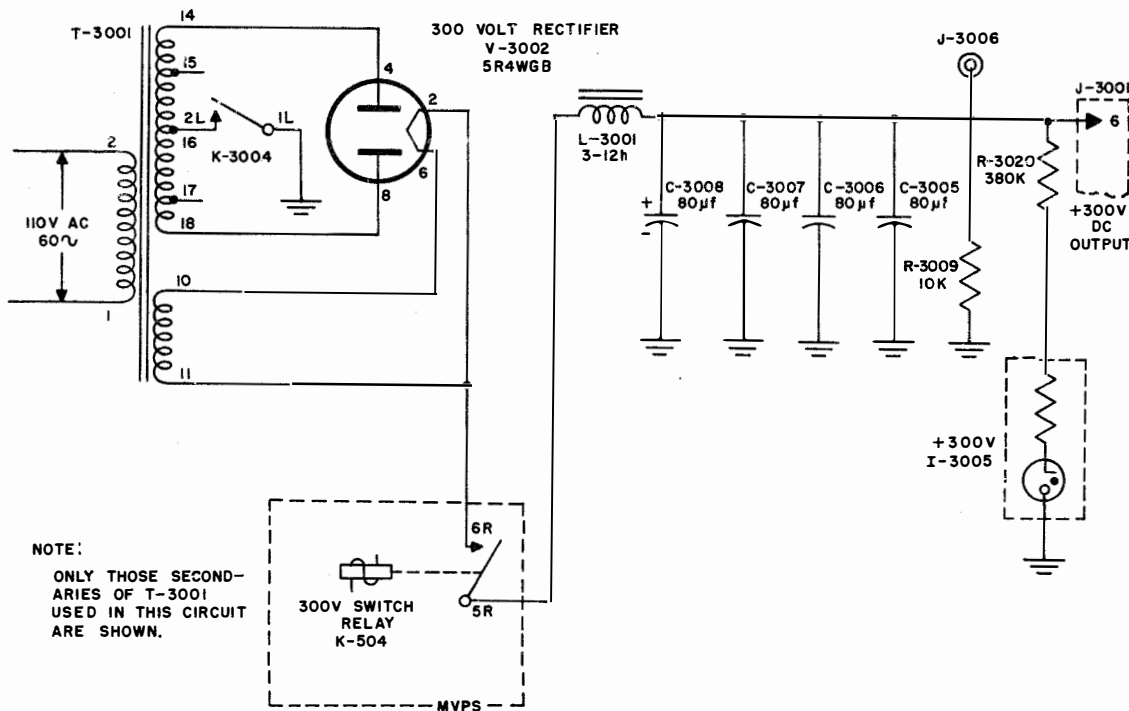


Figure 2-58. +300-Volt D-C Supply, Simplified Schematic

after T.D." is applied to stand-by relay K-3005. Depending on the mode of operation (see paragraph 7c(1)), which is controlled in the LLRM, K-3005 will energize, providing another source of -24-volt d-c power. This is known as "-24 V after standby" and is supplied to MVPS (and HLRM and HVPS in the AN/SRT-15, 16). TIME DELAY indicator I-3002 denotes presence of "-24 volts after T.D."

e. +300-VOLT D-C SUPPLY.—The +300-volt rectifier, V-3002 (figure 2-58), is a conventional full-wave rectifier. The plate voltage is taken from terminals 14 and 18 (840 volts rms) on T-3001. Part of this secondary winding is also used for the 250-volt unregulated supply. The supply has a ground return through the center tap terminal 16 and contacts 2L and 1L of K-3004, which is energized when the 30-second time delay runs out. This allows time for the rectifier filaments to reach operating temperature before V-3002 begins to conduct. The rectified voltage is taken from the cathode and is fed to a single choke input filter through the contacts 5R and 6R of 300 V switch relay K-504, which is located in the MVPS. K-504 is energized when the 500-volt supply in the MVPS is energized. As the 300-volt supply is primarily a screen voltage supply and the 500-volt supply is basically a plate voltage supply in the LLRM and RFA, the action of K-504 insures that plate voltage is present when screen voltage is applied, thus preventing damage to the screens of the respective tubes they supply. The single choke input filter of the 300-volt supply consists of L-3001, C-3005, C-3006, C-3007, and C-3008. R-3009 acts as a bleeder for the filter capacitors and also improves regulation. R-3020 is a dropping resistor for the +300 V indicator

I-3005, which denotes the presence of the +300-volt supply. The +300-volt output, rated at 200 ma, is delivered to the RFA and LLRM. J-3006 provides a test point for measuring this supply.

f. +250-VOLT D-C UNREGULATED SUPPLY.—The +250-volt rectifier, V-3001 (figure 2-59), is a conventional full-wave rectifier. The plate voltage is taken from terminals 15 and 17 (740 volts rms) on T-3001. This secondary winding is also used for the +300-volt supply. The supply has a ground return through the center-tap terminal 16 and contacts 2L and 1L of K-3004, as described in the previous paragraph. The rectified voltage is taken from the cathode of V-3001 and passed through the double choke input filter comprised of L-3003, C-3004A, and C-3004B. R-3008 is a bleeder for the filter capacitors and improves regulation. R-3019 is a dropping resistor for the +250 V indicator, I-3004, which denotes the presence of the +250-volt unregulated supply. This supply, which is rated at 200 ma, is delivered to the RFO. J-3004 provides a test point for measuring this supply.

g. -220-VOLT D-C SUPPLY.—The -220-volt rectifier, V-3003 (figure 2-60), is a conventional full-wave rectifier with a negative voltage output. Plate voltage for V-3003 is taken from terminals 19 and 21 (590 volts rms) of T-3001. To obtain a negative output, the cathode is connected to ground and the rectified voltage is taken from the center-tap terminal 20 and through contacts 2R and 1R of K-3004, which closes after the time delay. The rectified voltage is filtered by a single choke input filter consisting of L-3002 and C-3010. The resistance network, consisting of R-3010, R-3011,

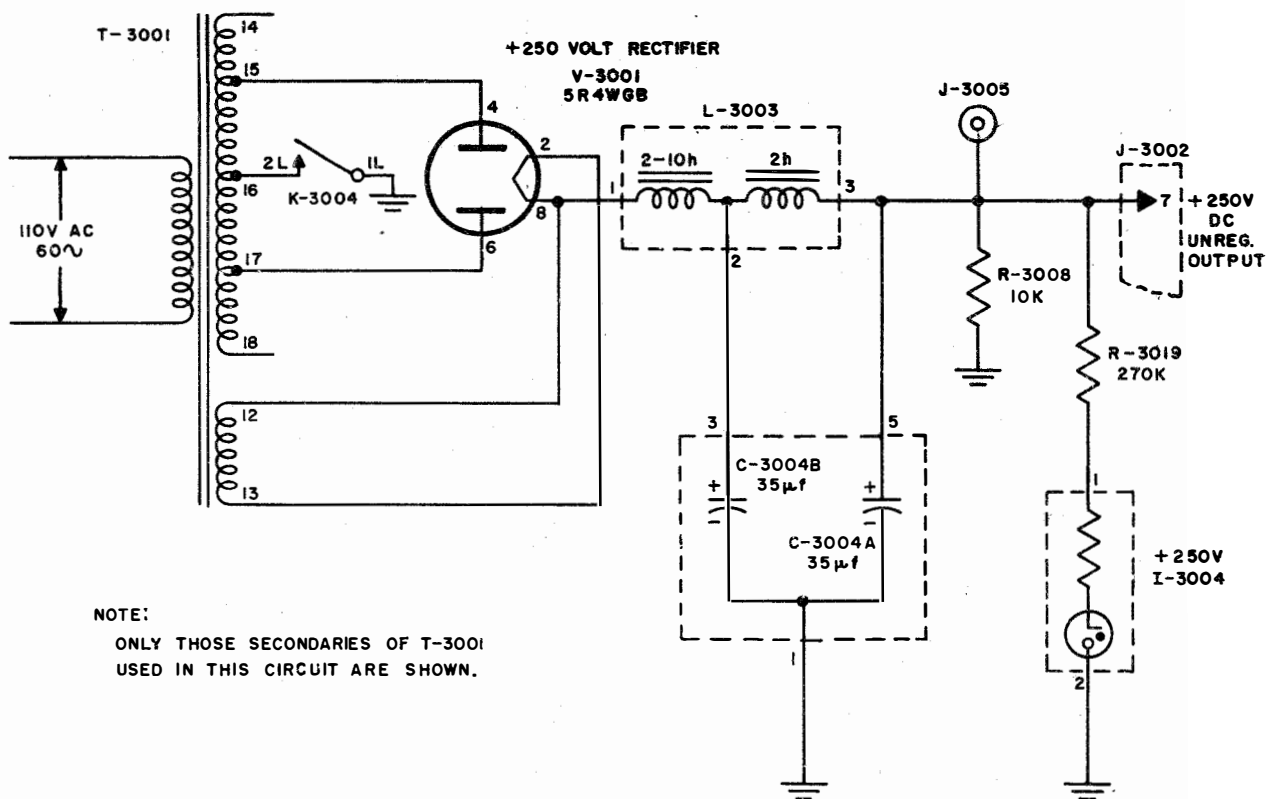


Figure 2-59. +250-Volt D-C Unregulated Supply, Simplified Schematic

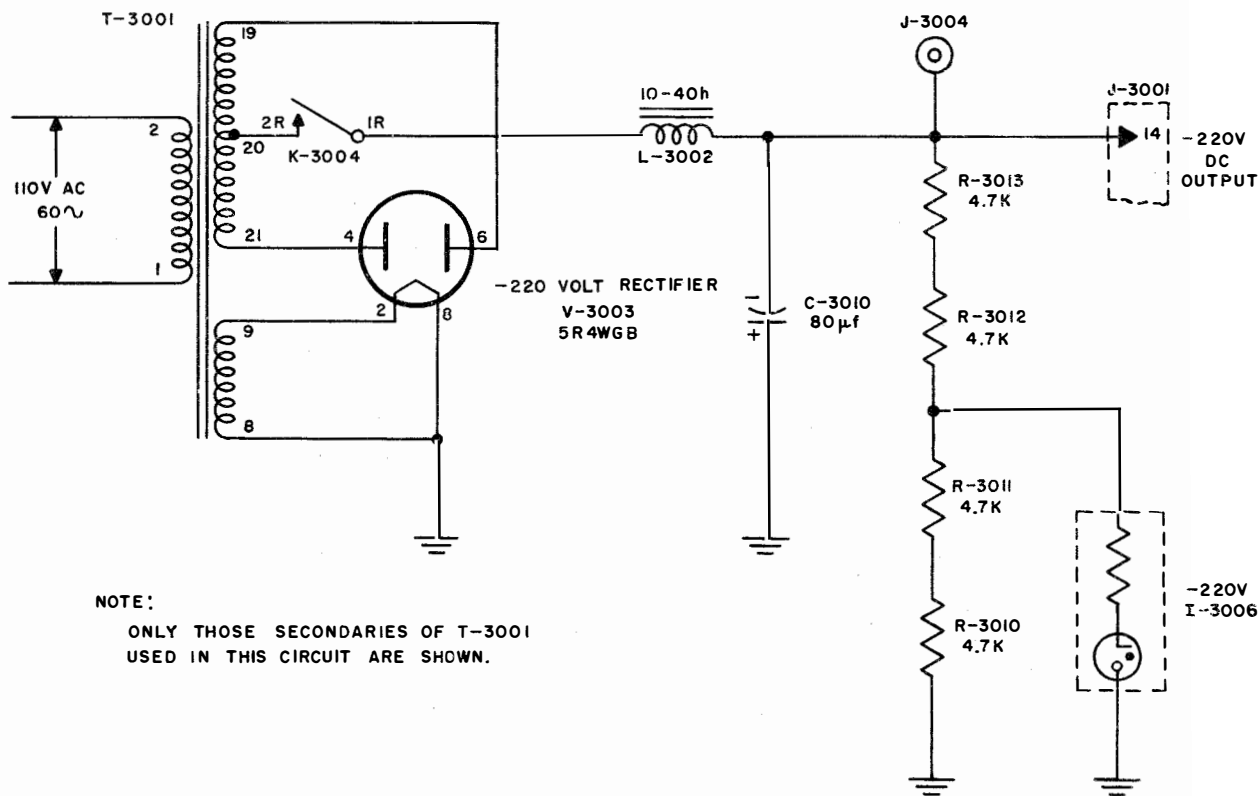
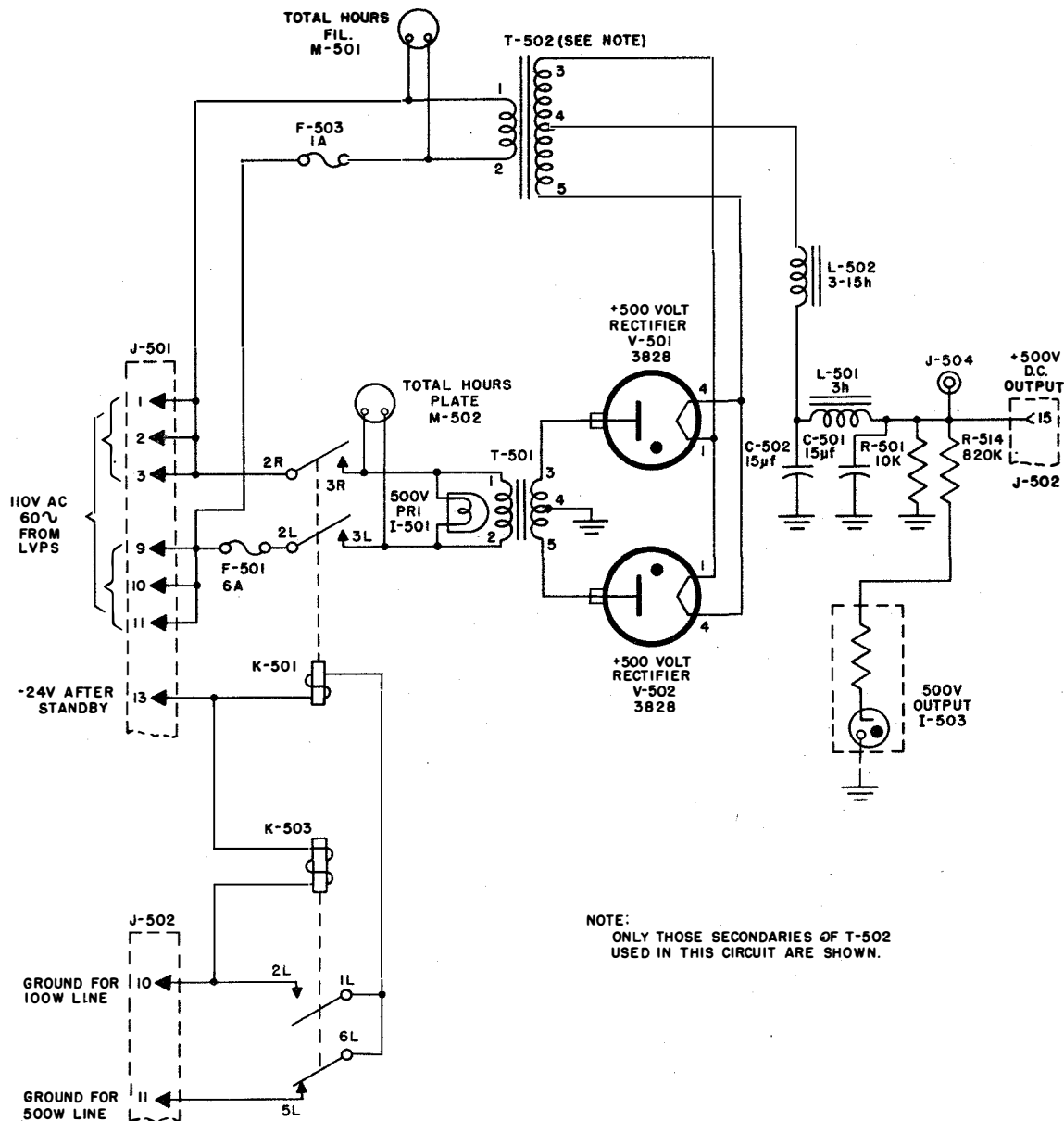


Figure 2-60. -220-Volt D-C Supply, Simplified Schematic



NOTE:
ONLY THOSE SECONDARIES OF T-502
USED IN THIS CIRCUIT ARE SHOWN.

Figure 2-61. +500-Volt D-C Supply, Simplified Schematic

R-3012 and R-3013, comprises a bleeder for the supply. This network also is a voltage divider, the center point of which is a tap for the -220 V indicator, I-3006, which denotes the presence of the -220-volt supply. J-3005 provides a test point for measuring this supply.

5. POWER SUPPLY PP-1095/SRT (MEDIUM VOLTAGE POWER SUPPLY, MVPS).

a. GENERAL.—The medium voltage power supply (MVPS) receives 110-volt a-c, 60-cycle, single-phase power from the LVPS and supplies +500 volts dc to the LLRM and RFA, and +1,050 or +1,300 volts dc to the RFA. In addition to the rectifier circuits, the MVPS contains a switching relay to insure +500-volt d-c supply is available before +300 volts dc is applied.

b. +500-VOLT D-C SUPPLY.—When the START button of the MAIN POWER switch (®), S-3004, on the LVPS is depressed, 110-volt a-c, 60-cycle, single-phase power is delivered to the filament transformer, T-502 (figure 2-61), whose primary is protected by fuse F-503. One secondary of T-502 supplies filament voltage to the +500-volt rectifiers, V-501 and V-502.

At the same time, a-c power is delivered through fuse F-501 to the contacts of relay K-501, which must be energized before power is applied to the +500-volt plate voltage transformer, T-501. K-501 is energized from the “-24 V after standby” line and receives ground through the contacts of relay K-503. K-503 is energized from the “-24 V after standby” line and the “ground for 100 W” line.

If the transmitter group is operating at the 100-watt level and the STANDBY-OPERATE switch (Ⓢ), S-3005 on the LVPS, is on OPERATE, the “-24 V after standby” line will be energized after the time delay is complete; also the “ground for 100 W” line will be connected and the “ground for 500 W” line will be opened. Therefore, K-503 will energize and K-501 will energize through contacts 1L and 2L of K-503 to “ground for 100 W” line. Energized K-501 supplies plate voltage for the +500-volt d-c supply through its contacts 2R, 3R and 2L, 3L and plate transformer T-501.

If the transmitter group is in 500-watt operation (AN/SRT-15 and 16 only), the “ground for 100 W” line will be opened and the “ground for 500 W” line will be completed. Thus K-503 will not be energized and K-501 now receives its ground through contacts 5L and 6L of K-503 and the “ground for 500 W” line. In 500-watt operation the 500 volts dc becomes primarily a screen supply and this transfer of ground, as described before, is to make sure that screen voltage will not be applied before the high voltage plate supply, which is also under control of the “ground for 500 W” line.

If the STANDBY-OPERATE switch (Ⓢ) is in STANDBY, on either 100-watt or 500-watt operation, the +500-volt d-c supply will not energize as the “-24 V after standby” line will be open and K-501 cannot be energized. This, in turn, will prevent a-c power from being applied to the plate transformer.

When 110-volt a-c power is applied to the primary of T-501 as described above, it is indicated by the 500 V PRI indicator, I-501, which is connected across the T-501 primary. The secondary of T-501 supplies 620 volts rms to the plates of rectifier tubes V-501 and V-502, which are connected to form a full-wave rectifier. The rectified voltage, taken from the center-tap terminal 4 of filament transformer T-502, is filtered by a double choke input filter comprised of L-502, C-502, L-501, and C-501. Resistor R-501 acts as a bleeder for the supply. Resistor R-514 is a dropping resistor for the 500 V OUTPUT indicator, I-503, which denotes the presence of the +500-volt d-c output. The output is rated at 364 ma and is supplied to the LLRM and RFA. J-504 provides a test point for measuring the +500-volt supply.

Two elapsed time indicators, TOTAL HOURS-FIL, M-501, and TOTAL HOURS-PLATE, M-502, are provided to indicate total time filament and plate power are on. M-501 is connected across the primary of the filament transformer, T-502, and M-502 is connected across the primary of the 500-volt plate transformer, T-501. As noted in the previous paragraphs, the filament transformer receives power as soon as the START button is pushed, regardless of “stand-by” or “operate” condition. However, T-501 receives power only when in the “operate” condition. Therefore, the reading of M-502 will give total time plate power is on, and the reading of M-501 shows the total time filament power is supplied. Both indications read to tenths of an hour.

c. 300-VOLT SWITCH RELAY.—The 300-volt switch relay, K-504 (figure 2-62), assures that +300-volt d-c supply of the LVPS does not come on before the +500-volt d-c supply of the MVPS, as explained in paragraph 4e. When the +500-volt d-c supply comes on, it is applied across the dropping resistors, R-519, R-520, R-521, and R-522, in series with the 300-volt switch relay, K-504. Capacitor C-505 is in parallel across K-504 through its normally closed contacts 1R and 2R, which makes K-504 slow operating. When K-504 operates, C-505 is removed from the circuit and resistor R-523 is placed across C-505 through contacts 3R and 4R of K-504 to allow C-505 to discharge without arcing at the contacts. When K-504 is energized, contacts 5R and 6R close, completing the +300-volt d-c supply circuit in the LVPS.

d. +1,050/+1,300-VOLT D-C SUPPLY.—The +1,050/+1,300-volt rectifier (figure 2-63) is used only in 100-watt transmission. The output to the RFA is +1,300 volts except during phone operation when it is reduced to +1,050 volts. When the START button of the MAIN POWER switch (Ⓢ), S-3004 on the LVPS, is depressed, 110-volt a-c, 60-cycle, single-phase power is delivered to the filament transformer, T-502, whose primary is protected by fuse F-503. One secondary of T-502 supplies filament voltage to the +1,050/+1,300-volt rectifiers, V-503 and V-504.

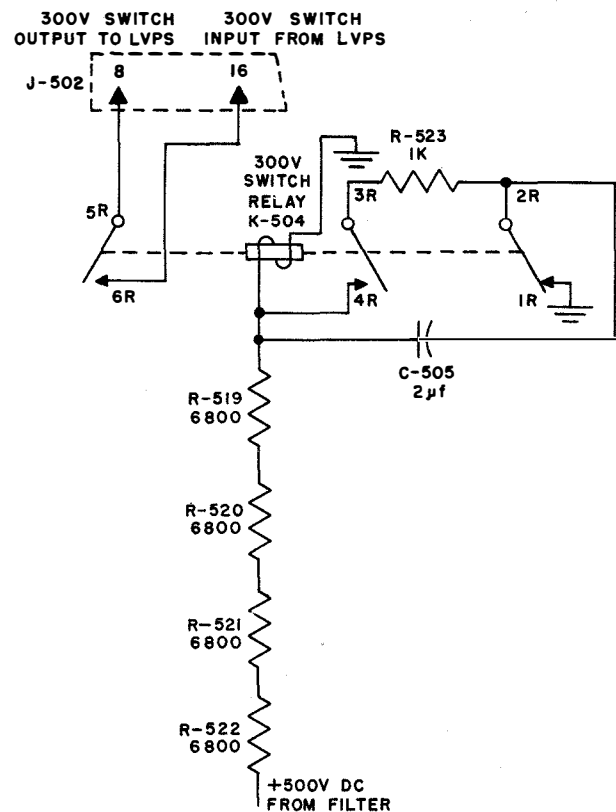


Figure 2-62. 300-Volt Switch Relay, Simplified Schematic

At the same time, a-c power is delivered through fuse F-502 to the contacts of relay K-503. K-503 must be energized before power is applied through the contacts of relay K-502 to the +1,050/+1,300-volt plate voltage transformer, T-503. As described in paragraph 5b, K-503 is energized only in 100-watt operation and if the STANDBY-OPERATE switch, S-3005 on the LVPS, is in OPERATE.

If the transmitter group is in other than phone operation, the "ground for phone" line is opened and relay K-502 cannot operate. Therefore, when K-503 is energized, 110-volt a-c power is applied through contacts 1R, 2R and 3L, 4L of K-503 and contacts 1L, 2L of K-502 to terminals 1 and 2 of the plate transformer primary which produces 3,160 volts rms at the secondary terminals 4 and 6. When rectified and filtered, this produces the +1,300-volt supply.

When the transmitter group is in phone operation the "ground for phone" line is prepared and relay K-502 energizes from "-24 V after TD" line. Energized K-502 now applies 110 volts ac to terminals 1 and 3 of the plate transformer primary, which increases the number of turns employed in the primary. This produces the effect of reducing the secondary to primary turns ratio, reducing the secondary voltage at terminals 4 and 6 to 2,480 volts rms. When rectified and filtered, this produces the +1,050-volt supply. The lesser voltage is used during phone operation because the power amplifier plate voltage is amplitude-modulated by the audio output of either the LLRM or HLRM. If the voltage were

not reduced, the peaks of the amplitude-modulated plate voltage of the power amplifier would exceed its peak voltage rating.

As relay K-502 operates only during phone operation, a circuit advances "ground for 500 W" line through the contacts 2R and 3R of K-502, when it is energized, to the HLRM for use in controlling the output of the HLRM during phone operation as described in paragraph 9b.

The energizing of relay K-503 also supplies 110 volts ac to the 1300 V PRI. indicator, I-502. As this indication is not under control of relay K-502, it indicates power applied to the plate transformer, T-503, for either the +1,050-volt or the +1,300-volt output.

Rectifier tubes V-503 and V-504 are connected as a full-wave rectifier. The rectified voltage is taken from filament, pin 4, of each tube and filtered by a double choke input filter comprised of L-504, C-504, L-503, C-503. Resistors R-502 and R-513 are bleeder resistors. Resistors R-515, R-516, R-517, and R-518 form a voltage divider to which 1300 V OUTPUT indicator I-504 is connected. The output is rated at +1,050 volts, 150 ma, and +1,300 volts, 180 ma, and is supplied to the RFA.

6. POWER SUPPLY PP-1096/SRT (HIGH VOLTAGE POWER SUPPLY, HVPS).

a. GENERAL. — The high voltage power supply (HVPS) is used only in the AN/SRT-15 and 16 for 500-watt transmission. This unit receives either 220-

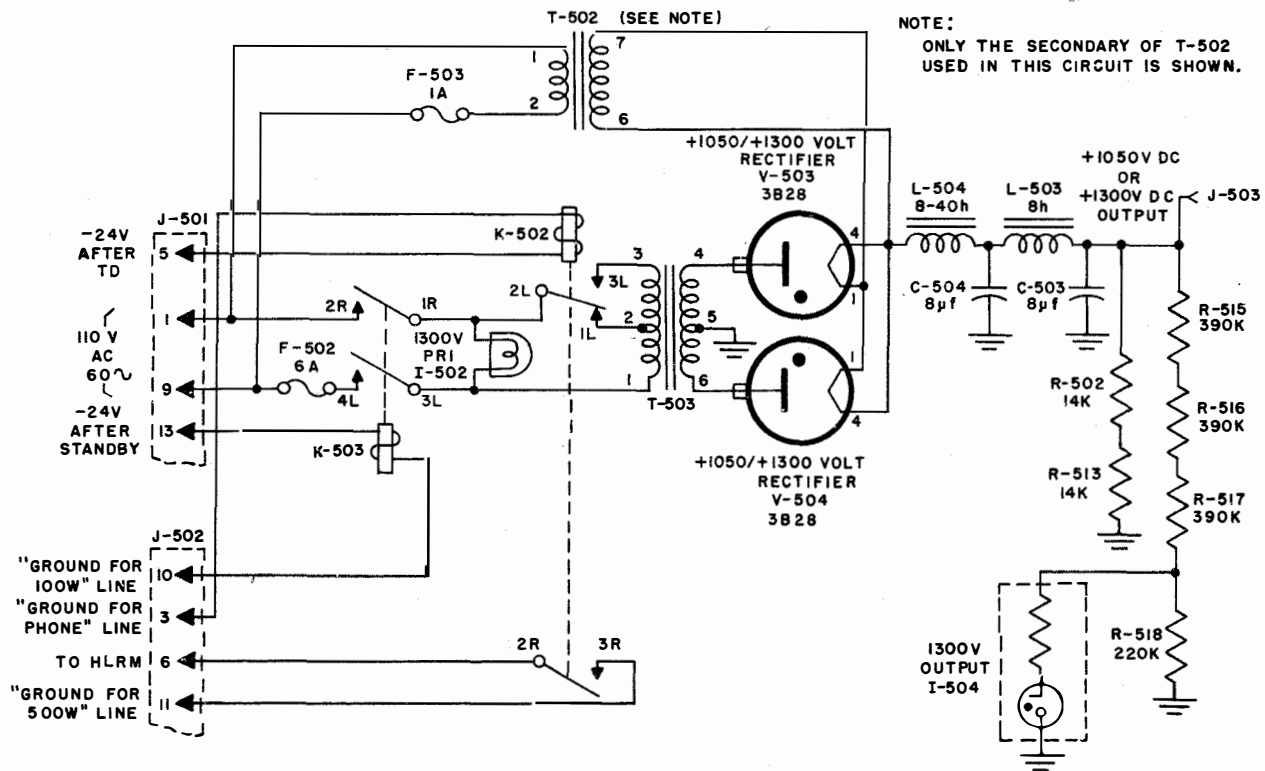


Figure 2-63. +1,050/+1,300-Volt D-C Supply, Simplified Schematic

NOTES:

* FOR 440V INPUT POWER, FUSES F-1501 THROUGH F-1505 (3.5 AMP) ARE USED; FOR 220V INPUT POWER, FUSES F-1506 THROUGH F-1510 (6.25 AMP) ARE USED.

FOR 220V INPUT POWER, R-1505, R-1506, R-1507 ARE SHORTED ON E-1503. ONLY THOSE TERMINALS OF E-1503 THAT APPLY TO THIS CIRCUIT ARE SHOWN.

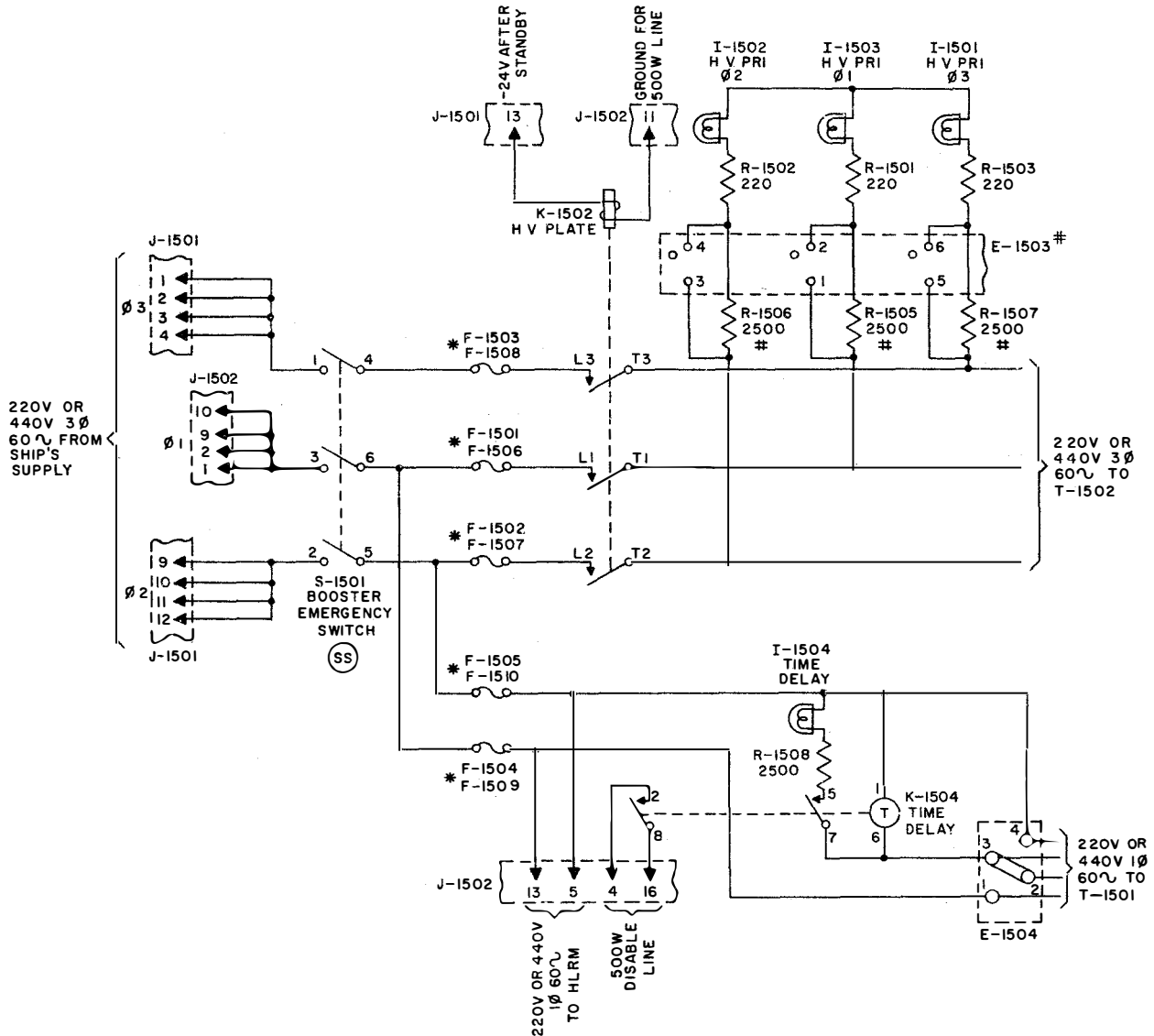
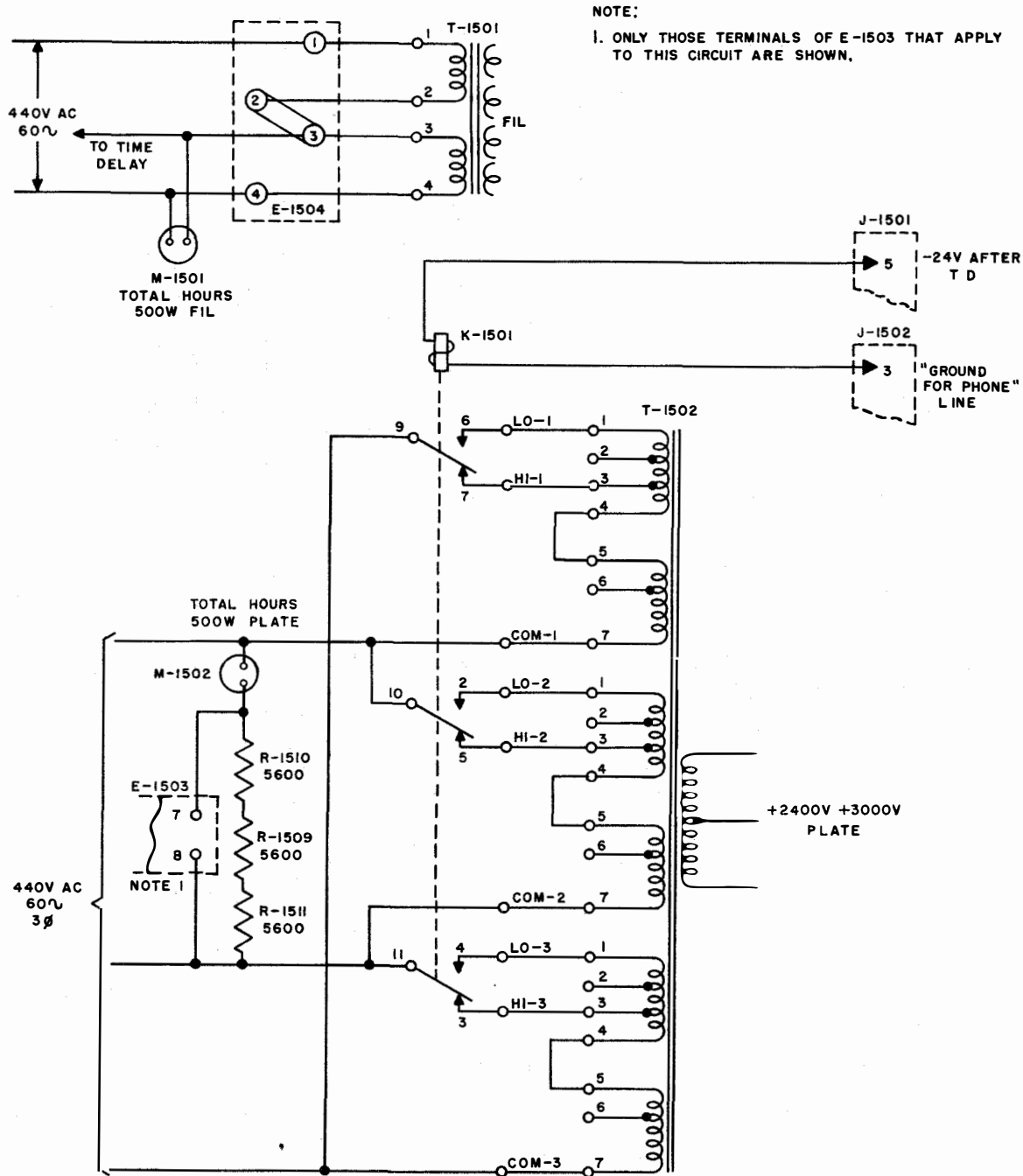


Figure 2-64. Input Circuit of HVPS, Simplified Schematic

volt or 440-volt a-c, 60-cycle, three-phase power from the ship's supply and has an output of either +3,000 volts dc or +2,400 volts dc, which is supplied to the HLRM.

b. INPUT CIRCUIT.—The HVPS receives from the ship's supply either 440 volts or 220 volts, three phase, at 60 cycles (figure 2-64). Power to the HVPS is controlled by BOOSTER EMERGENCY SWITCH S-1501. The three-phase line supplies voltages to both the plate transformer, T-1502, and the filament transformer, T-1501. The filament transformer is connected across one phase of the input and is fused by F-1504 and F-1505 or F-1509 and F-1510. For 440-volt input,

3.5-amp fuses F-1504 and F-1505 are used, and for 220-volt input, 6.25-amp fuses F-1509 and F-1510 are used. Power is connected to T-1501 through terminal board E-1504. With 440-volt input (figure 2-65), a link is placed between terminals 2 and 3 of E-1504, which places the two primaries of T-1501 in series across the line. With 220-volt input (figure 2-66), links are placed between terminals 1 and 3 and between 2 and 4, which places the two transformer primaries in parallel. In either case, the voltage across either one of the two primaries (terminals 1 and 2 or 3 and 4 of T-1501) is 220 volts.



NOTE:
1. ONLY THOSE TERMINALS OF E-1503 THAT APPLY TO THIS CIRCUIT ARE SHOWN.

Figure 2-65. Transformer T-1502 Primary and Meter Connections for 440-Volt Input

The motor of the time delay relay K-1504 is connected across terminals 3 and 4 of E-1504, which is at 220 volts with either 220-volt or 440-volt input. As soon as the BOOSTER EMERGENCY SWITCH (S), S-1501, is closed, 220 volts is applied to the motor of K-1504. After approximately 30 seconds, K-1504 closes its two sets of contacts. Contacts 5 and 7 place TIME DELAY indicator I-1504 and dropping resistor R-1508 across 220 volts. Contacts 2 and 8 prepare the "500 W disable" line, which disables the 500-watt operation controls, including application of power to the plate trans-

former, T-1502, until the filaments of the HVPS have had time to reach operating temperature. When contacts 2 and 8 of K-1504 close and if the other conditions are met, the transmitter group can be placed in 500-watt operation (see paragraph 10e(1)). The "ground for 500 W" line is now completed, and if the STANDBY-OPERATE switch (S), S-3005 in the LVPS, is in OPERATE, the "-24 V after standby" line will be energized, and high voltage plate relay K-1502 will be energized. Contacts L1 and T1, L2 and T2, and L3 and T3 of K-1502 connect 220-volt or 440-volt three-phase

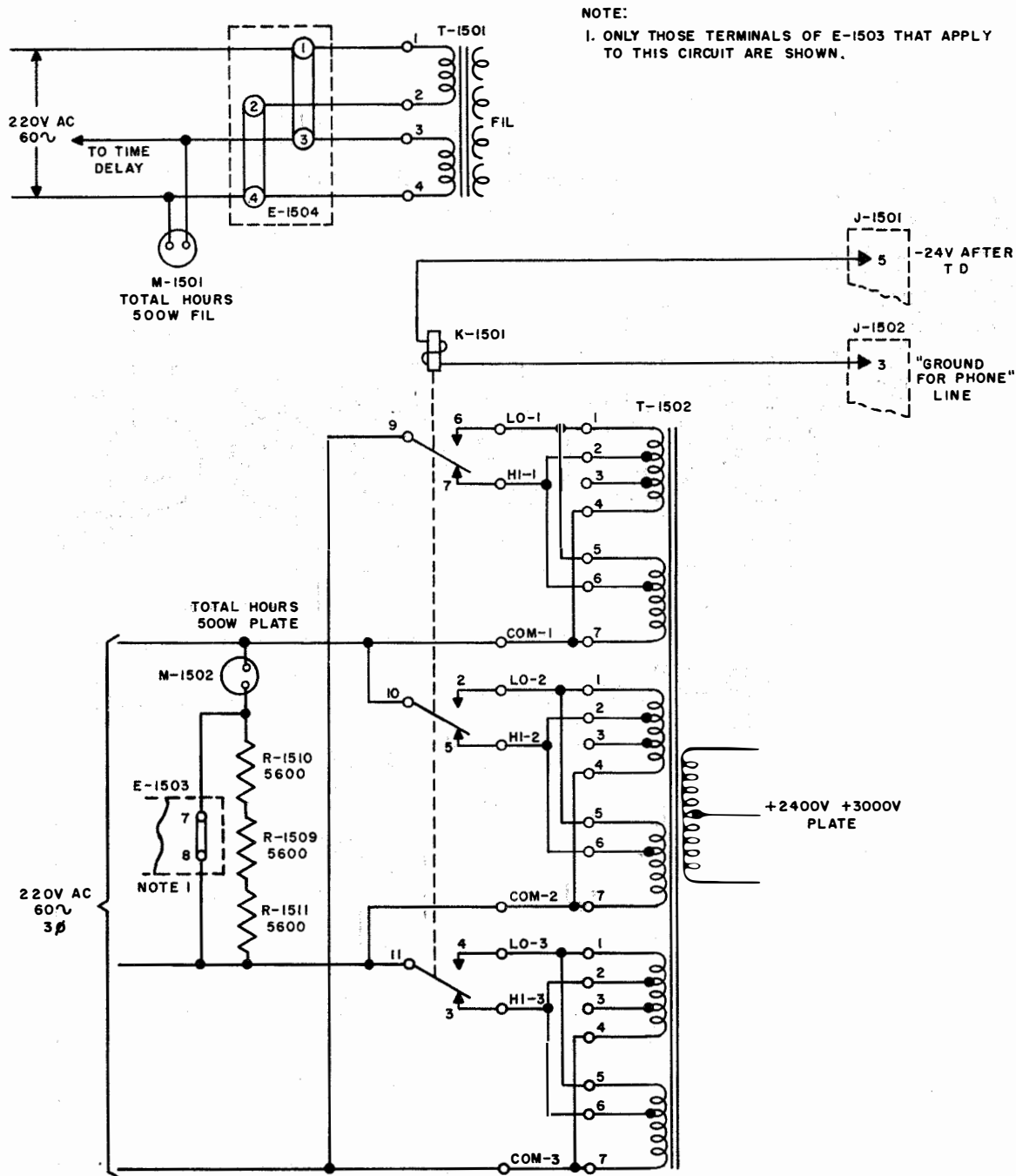


Figure 2-66. Transformer T-1502 Primary and Meter Connections for 220-Volt Input

power to plate transformer T-1502 through fuses F-1501, F-1502, and F-1503 or F-1506, F-1507, and F-1508. These fuses are 3.5 amp (F-1501 through F-1503) for 440-volt input, and 6.25 amp (F-1506 through F-1508) for 220-volt input.

When contacts L1 and T1, L2 and T2, and L3 and T3 of K-1502 close, three-phase power is connected to indicators H.V. PRIMARY- ϕ (I-1503), H.V. PRIMARY- ϕ 2 (I-1502), and H.V. PRIMARY- ϕ 3 (I-1501), which

are wye-connected across the phases and indicate the presence of voltage at the primary of the plate transformer, T-1502. Resistors R-1501, R-1502, R-1503, R-1505, R-1506, R-1507 are dropping resistors for the indicators. With 220-volt input, R-1505, R-1506, R-1507 are shorted by connecting links between terminals 1 and 2, 3 and 4, 5 and 6 on E-1503. If one phase is open, the indicator for that phase will not light; if two or all three phases are open, none of the indicators will light.

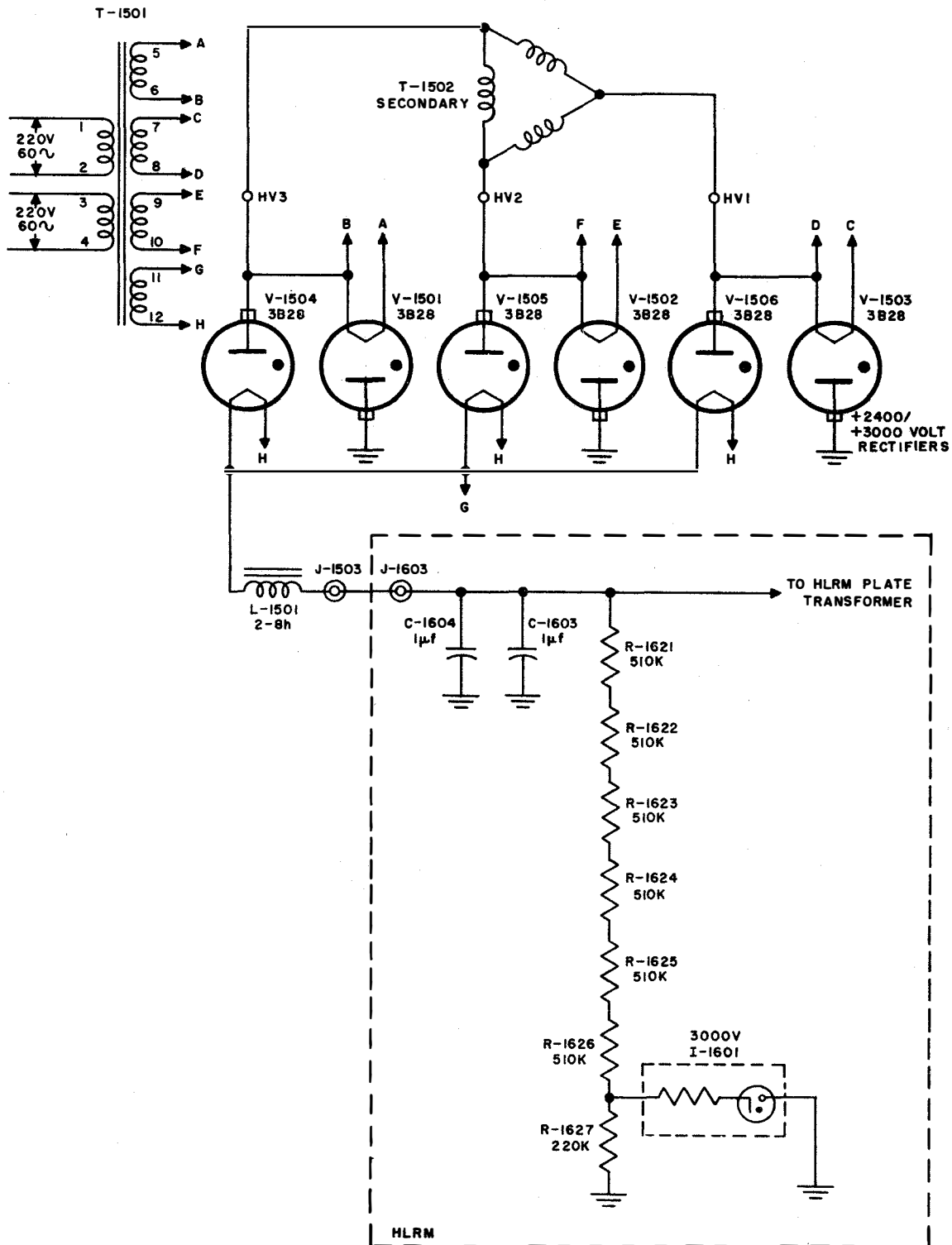


Figure 2-67. +2,400/+3,000-Volt D-C Supply, Simplified Schematic

Two elapsed time indicators, TOTAL HOURS-500 W-FIL (M-1501) and TOTAL HOURS-500 W-PLATE (M-1502) (figures 2-65 and 2-66), are provided to indicate total time the transmitter group operates at 500 watts. M-1501 is connected across 220 volts in parallel with one primary winding of the filament transformer, T-1501, and thus records total time power is applied to the HVPS filaments. M-1502 is connected across one of the phases of the line in parallel with primary 2 of the plate transformer, T-1502, and, accordingly, records total time plate power is applied to the HVPS. Resistors R-1509, R-1510, R-1511 are dropping resistors for M-1502 with 440-volt input. With 220-volt input, these resistors are shorted by connecting links between terminals 7 and 8 on E-1503.

c. +2,400/+3,000-VOLT SUPPLY.—The +2,400/+3,000-volt rectifier circuit may have a three-phase input of either 440 volts or 220 volts. Figures 2-65 and 2-66 show the primary connections of T-1501 and T-1502 for each voltage. The primary of filament transformer T-1501 has two windings. Links on terminal board E-1504 connect the primary windings of T-1501, either in parallel (220-volt input) or in series (440-volt input). The primary of plate transformer T-1502 has six windings, arranged in a delta connection with two windings in each phase. With a 440-volt input (figure 2-65), these two windings are placed in series, and with a 220-volt input (figure 2-66) they are in parallel; therefore, there is always 220 volts across each winding. The primary connections of T-1502 are changed by means of links on a terminal board mounted on the transformer.

Relay K-1501 is energized during phone operation and reduces the output of the supply from +3,000 volts at 355 ma to +2,400 volts at 560 ma by decreasing the turns ratio of plate transformer T-1502. The voltage output is reduced during phone operation because it is amplitude-modulated by the audio output of the HLRM. Therefore, the power output of the RFA is smaller during phone operation.

The secondary of T-1502 is delta-connected (figure 2-67). Each winding develops 2,260 volts rms when the transmitter is on cw, and 1,835 volts rms when the transmitter is on phone. Six half-wave rectifiers, V-1501 through V-1506, are connected as a three-phase full-wave rectifier. There are always two tubes conducting.

If we assume that point HV-1 is positive and HV-2 is negative, rectifiers V-1506 and V-1502 are conducting. Electron flow is from HV-2 through V-1502 to ground, then through the load and back through V-1506. When the polarity of this phase reverses (HV-1 negative, HV-2 positive), rectifiers V-1503 and V-1505 conduct. Electron flow is now from HV-1 through V-1503 to ground, then through the load and back through V-1505. Therefore, this phase gives two current peaks for each cycle. Similarly, each of the other two phases gives two current peaks for each cycle, but at different times because of the 120° phase angle between each phase voltage (figure 2-68). This develops six

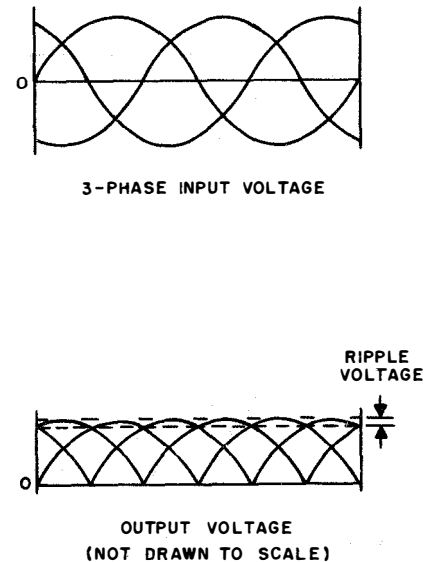


Figure 2-68. +2,400/+3,000-Volt Rectifier Input and Output, Voltage Wave Forms

current peaks through the load during the time for one cycle. The ripple frequency at the output of the rectifiers will therefore be six times the input frequency, or 360 cps. Since the ripple frequency is so high, filter capacitors C-1603 and C-1604 may be smaller than would be required for a single-phase, full-wave rectifier because less filtering is required.

Except for the input choke, L-1501, the filter and voltage divider resistors are located in the HLRM because of space limitations in the HVPS. The single choke input filter consists of L-1501, L-1604, and C-1603. Resistors R-1621 through R-1627 form a voltage divider from which the 3,000 V indicator, I-1601, receives its operating voltage, and they also act as bleeders for the +3,000-volt supply.

Filament transformer T-1501 has four secondaries, of which three are 5-ampere windings and one a 15-ampere winding. The 15-ampere winding (terminals 11 and 12) supplies filament power to V-1504, V-1505, and V-1506. Rectifiers V-1501, V-1502, and V-1503 each employ a separate 5-ampere filament winding. This difference in the ratings of the secondary windings must be carefully observed when replacing transformer T-1501.

The +3,000-volt output is supplied to the HLRM in 500-watt level for cw, frequency-shift, and facsimile operation, while +2,400 volts is supplied to the HLRM at the 500-watt level for phone operation.

7. RADIO MODULATOR MD-229/SRT (LOW LEVEL RADIO MODULATOR, LLRM).

a. GENERAL.—The low level radio modulator (LLRM) consists of an audio amplifier chain, a keying circuit, the LOCAL-REM switch (X), S-1106, a regulated +250-volt power supply, a -12-volt power supply and an ATU bypass transfer circuit (figure 2-130).

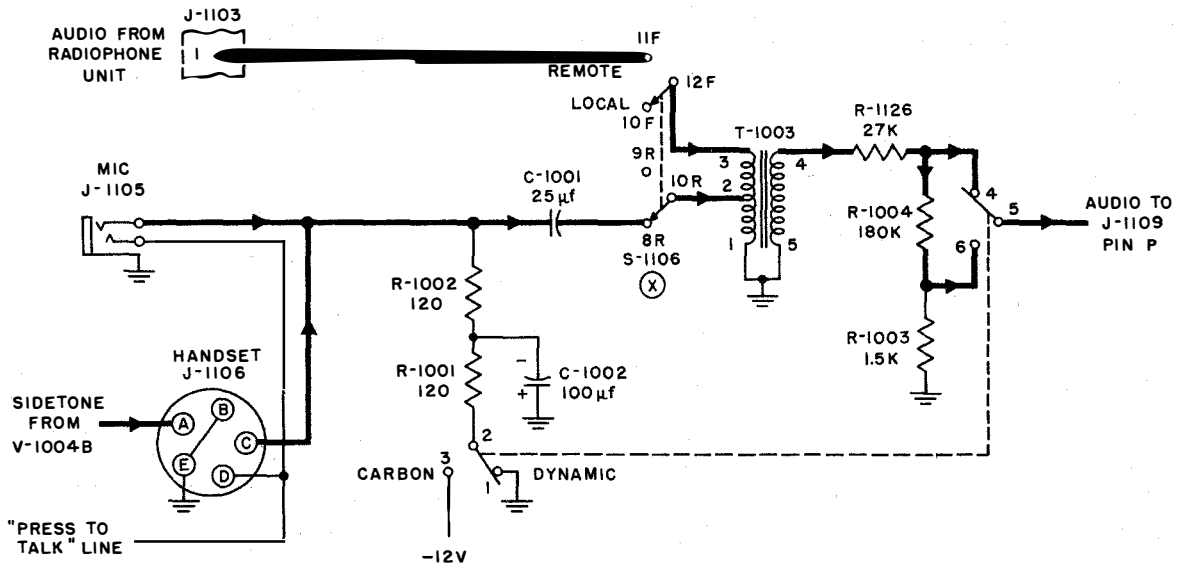


Figure 2-69. Audio Input Circuit, Simplified Schematic

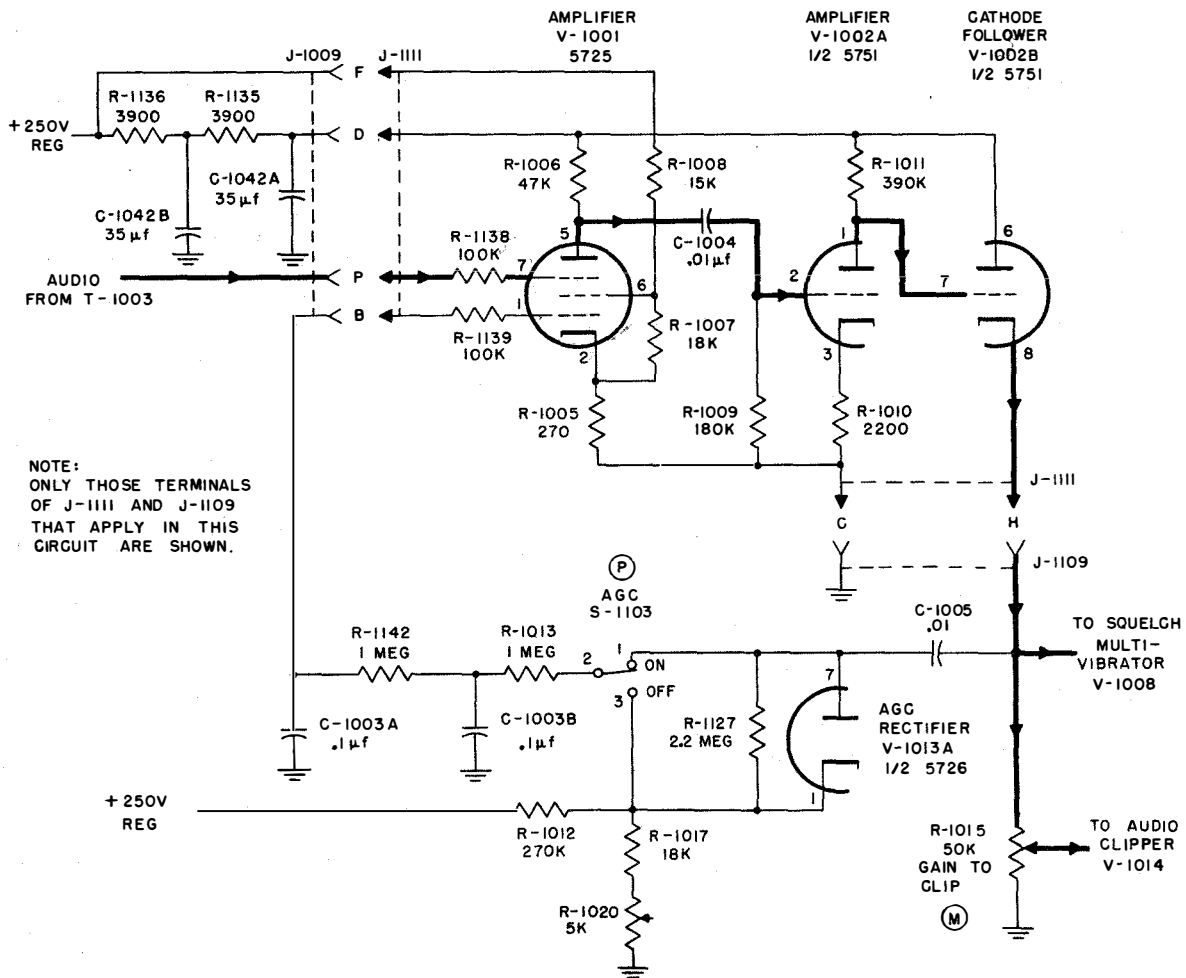


Figure 2-70. Audio Amplifiers V-1001 and V-1002A, Cathode Follower V-1002B and AGC Rectifier V-1013A, Simplified Schematic

b. AUDIO AMPLIFIER CHAIN.—The audio amplifier chain receives a signal locally from either a carbon or dynamic microphone or remotely from a radiophone unit when the transmitter group is in phone operation. In 100-watt operation, this signal is amplified to a level suitable for 100 percent amplitude modulation of the plate of the power amplifier in the radio frequency amplifier. In 500-watt operation there is a secondary output of the audio amplifier chain, which is fed to the high level radio modulator for further amplification. The circuitry is designed to minimize the effects of noise, microphonics, and other interferences which tend to obscure the clarity of the audio signal.

(1) AUDIO INPUT CIRCUIT.—An audio input may be received locally through the HANDSET jack, J-1106, or the MIC. jack, J-1105 (figure 2-69). The signal is coupled to the 35-ohm tap (terminal 2) of the input transformer, T-1003, through capacitor C-1001 and contacts 8R and 10R of the LOCAL-REM switch (X), S-1106, in the LOCAL position. If the input is from a carbon microphone, -12 volts to energize the microphone is supplied through contacts 2 and 3 of the DYNAMIC-CARBON switch (Y), S-1102, and the filter network comprised of resistors R-1001 and R-1002 and capacitor C-1002. With dynamic microphone input, the -12 volts is disconnected and the filter network is tied to ground. The impedance of the filter network is high enough to not seriously shunt the 35-ohm termination of the microphone line. When the audio signal comes from a remote radiophone unit, it is connected across the full 600-ohm primary of T-1003 (terminals 1 and 3) through contacts 11F and 12F of switch (X) S-1106 in the REM position. The output of transformer T-1003 (terminals 4 and 5) is connected to a voltage divider network comprised of resistors R-1126, R-1004, and R-1003 to ground. To compensate for the fact that the signal level from a carbon microphone is higher than from a dynamic microphone, the output to the following stage for dynamic microphone input is taken from a higher tap on the voltage divider by means of DYNAMIC-CARBON switch S-1102. With DYNAMIC phone input, the output to the following stage is taken from the junction of R-1126 and R-1004, through contacts 4 and 5 of DYNAMIC-CARBON switch (Y) S-1102 in the DYNAMIC position, while, for carbon microphone input, the output is taken from the junction of R-1004 and R-1003 through contacts 6 and 5 of DYNAMIC-CARBON switch (Y) S-1102 in the CARBON position. The comparative signal levels, as determined by the values of the voltage-divider resistors, are such that the following amplifier stage will not be overdriven, causing distortion.

(2) AUDIO AMPLIFIERS V-1001 AND V-1002A, CATHODE FOLLOWER V-1002B AND AGC RECTIFIER V-1013A.—The output from T-1003 is fed to a two-stage audio preamplifier consisting of V-1001 and V-1002A (figure 2-70). The preamplifier feeds a cathode follower V-1002B, whose function is to match the high-impedance output of the preamplifier to the

low impedance of the clipper stage that follows. The cathode follower output is also fed to the AGC circuit, which is a negative feedback to the first stage of the preamplifier, V-1001, causing V-1001 to have a constant output level over a large range of input amplitudes.

(a) AUDIO AMPLIFIERS V-1001 AND V-1002A.—Connections between the audio amplifiers, V-1001 and V-1002A, that are mounted on the subchassis and associated components on the main LLRM chassis are made through a male connector, J-1111, mounted on the subchassis, and a mating female connector, J-1109, mounted on the main chassis. The audio output from T-1003 is connected to the suppressor grid, pin 7 of V-1001, through the "P" pins of J-1109 and J-1111 and grid resistor R-1138. The AGC control voltage is applied to the control grid, pin 1 of V-1001, through the "B" pins of J-1109 and J-1111 and grid resistor R-1139. The voltage-divider network, comprised of resistors R-1008, R-1007 and R-1005, connected from the +250-volt regulated supply to ground, besides supplying screen grid voltage also places a cathode-biasing potential of approximately two volts on V-1001. During no-signal condition, the AGC circuit causes the control grid to draw a small amount of current so that control grid to cathode voltage is approximately zero. The total suppressor grid to cathode bias potential is approximately -4 volts, which is a sum of the power bias potential and the self-biasing caused by no-signal tube current flow. This keeps the tube operating in the linear portion of its characteristic. The effect of supplying the signal to the suppressor grid and the AGC control to the control grid is to produce a highly sensitive AGC control without requiring high input signal strength as compared to the AGC voltage, which would be needed to prevent distortion when AGC and signal voltages are both applied to the control grid. A complete description of the AGC action follows in paragraph 7b(2)(c). The output of V-1001 is fed to a high-gain triode V-1002A, which is a standard audio amplifier using degenerative feedback through cathode resistor R-1010 for improved fidelity.

(b) CATHODE FOLLOWER V-1002B.—To match the relatively high output impedance of V-1002A to the low impedance of the diode clipper stage, a cathode follower V-1003A is introduced. The plate of V-1002A, pin 1, is directly connected to the grid, pin 7, of V-1002B to provide a large enough signal voltage swing across the cathode resistor, R-1015. R-1015 is a potentiometer, so that the amplitude of the signal coupled to the following clipper stage may be controlled. This is identified as the GAIN TO CLIP control (M). The full signal developed across R-1015 is also coupled to the squelch circuit and to the AGC circuit.

(c) AGC RECTIFIER V-1013A.—The signal from V-1003A is coupled to the AGC circuit through capacitor C-1005. A voltage-divider network consists of R-1012, R-1017, R-1020 from +250 volts to ground so that the junction of R-1012 and R-1017 is at +20 volts. This point is tied to the cathode, pin 1, of the AGC

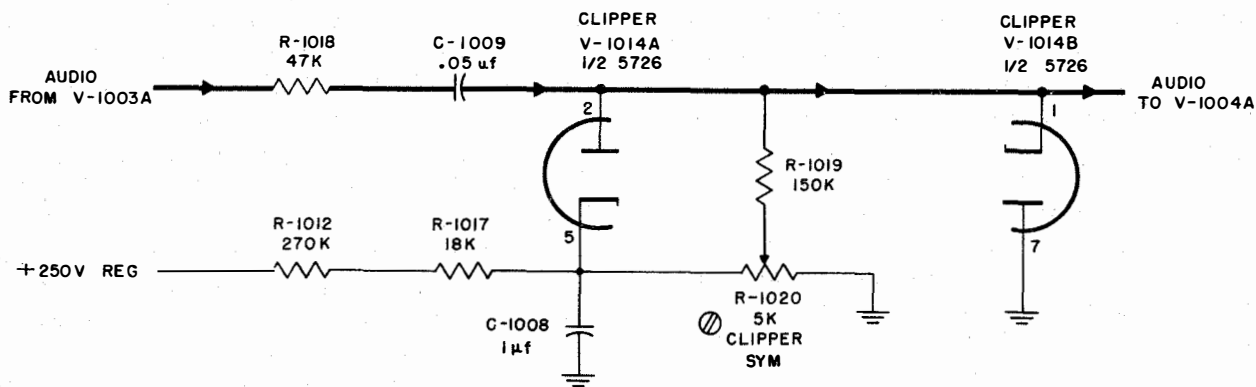


Figure 2-71. Clipper V-1014, Simplified Schematic

rectifier, V-1013A, and to resistor R-1127; then through contacts 1 and 2 of the AGC switch, (P), S-1103, in the ON position, resistors R-1013 and R-1142 through the "B" contacts of J-1109 and J-1111 to R-1139, and then to the control grid of the first amplifier, V-1001. This tends to make the V-1001 grid draw current, but because of the large values of R-1127, R-1013, R-1142, and R-1139, this current is so small that, effectively, the grid to cathode potential of V-1001 is zero volts. As the cathode of V-1001 is biased at no signal to approximately +4 volts to ground, the grid to ground voltage is also +4 volts. Effectively there is a voltage-divider action at no signal across R-1127, R-1013, R-1142, and R-1139 from +20 volts to +4 volts, so that the junction between R-1127 and R-1013, at which point the plate of the AGC rectifier, V-1013A (pin 7), is tied, is at +12 volts. Therefore, during no-signal condition, the plate of the AGC rectifier is approximately -8 volts with respect to its cathode. Whenever a positive peak of the audio exceeds 8 volts, the AGC rectifier will conduct and any additional peak signal voltage will build up a charge across capacitor C-1005. During the negative portions of the signal, the voltage across C-1005 is connected through the two-section filter comprised of R-1013, C-1003B, R-1142, and C-1003A, through the AGC switch (P), S-1103, in the ON position to the control grid of V-1001. The polarity of this voltage across C-1005 is negative with respect to ground. As C-1005 is connected to the control grid of V-1001, the voltage developed across it tends to increase the bias on V-1001, decreasing its gain. The higher the signal voltage appearing across the output of the cathode follower, the larger will be the negative bias built across C-1005. The bias developed by the AGC circuit, of course, cannot completely counteract its cause, which is increased signal strength. However, the gain of V-1001 is controlled so that a 30-db range of input will cause less than a 10-db range of output. The AGC may be turned off by placing the AGC switch (P), S-1103, in the OFF position. This removes the AGC rectifier from the circuit and connects the +20-volt tap on the voltage divider directly to the grid of V-1001 through contacts 2 and 3 of S-1103 and resistors R-1013 and R-1142, which keeps the control grid-to-cathode potential at approximately zero volts.

(3) CLIPPER V-1014.—This stage (figure 2-71) limits the audio signal amplitude to prevent overmodulation of the carrier by excessively strong signals. The clipper, V-1014, is a double diode. The plate of the first half, pin 7, is connected to ground and the cathode of the second section is tied to +4 volts at the junction of R-1017 and R-1020, which is part of a voltage divider from regulated +250 volts to ground, consisting of R-1012, R-1017, and R-1020. The cathode of the first half, pin 1, and the plate of the second half, pin 2, are tied together and held at a d-c potential of between +4 volts and zero, depending on the setting of potentiometer R-1020, which is adjustable to allow for a difference in characteristics between the two halves of V-1014. If the two halves are exactly similar, the setting of the arm of R-1020 is +2 volts. The audio signal from the cathode follower is coupled by capacitor C-1009 to the junction of pins 1 and 2 of V-1014. Effectively, the cathodes of both halves are approximately two volts more positive than their respective plates, with the signal being fed to the plate of one half and the cathode of the other half. When the positive peak of the audio signal reaches +2 volts, the plate of the second half of V-1014 becomes positive with respect to its cathode, and the second half of V-1014 conducts, clipping the positive swing of the signal to a maximum of two volts, the additional signal peak above two volts appearing across resistor R-1018. The same reasoning holds when the negative swing of the audio signal reaches two volts, with the first half of V-1014 conducting in this case instead of the second half. As mentioned above, the CLIPPER SYM. potentiometer, R-1020, is adjusted so that any difference in plate current characteristics of the two halves of V-1014 can be regulated to make sure that the positive and negative peaks of the audio signal are clipped at the same voltage level. The clipper output is developed across resistor R-1019 and coupled to audio amplifier V-1004A.

(4) AUDIO AMPLIFIERS V-1004A AND V-1002B.—The output of the clipper is coupled through capacitor C-1010 to audio amplifier V-1004A (figure 2-72), which amplifies the signal and couples it through capacitor C-1041 to band-pass filter network Z-1001, which passes frequencies in the range of 200 cps to 4,500

cps. This filter cuts out the high-frequency harmonics of the audio signal, which were introduced by the clipper action in the previous stage, as well as noise frequencies outside of the band of the filter. The output of the filter is applied across potentiometer R-1032, which is known as the % MOD (N) control. In 100-watt operation, the LLRM delivers 50 watts to the RFA to modulate the carrier, while during 500-watt operation the LLRM delivers 6 watts to the HLRM. For this reason the output of the potentiometer, R-1032, is fed to a voltage-divider chain under control of gain change relay K-1104. During 100-watt operation the entire output is coupled to the following stage through contacts 7R and 8R of unenergized K-1104. In 500-watt operation, K-1104 is energized and the output of R-1032 is applied across the network of R-1050, R-1049, and the 500 W. AUDIO LEVEL variable resistor, R-1048, to ground. The tap on the network at the junction between R-1050 and R-1049 is now coupled to the following stage through contacts 9R and 8R of energized K-1104. Depending on the setting of R-1048, the audio signal fed to amplifier V-1002B in 500-watt operation is 30 percent to 50 percent of the signal output from R-1032. The output of R-1032 is adjusted for 100 percent modulation of the carrier in either 100-watt or 500-watt operation. The setting of R-1048 is a fine control for adjusting for 100 percent modulation in 500-watt operation. With SERVICE SELECTOR switch (U) S-1101 in any other position than PHONE, any signal output from amplifier V-1004A will be grounded through contacts of S-1101E front. In addition to being coupled to V-1002B, the

signal from V-1004A is under control of the keying relay, K-1101, when SERVICE SELECTOR switch S-1101 is in the PHONE position, through contacts 12 and 6 of S-1101F rear. In phone operation, keying relay K-1101 is energized when the press-to-talk button on the phone is depressed. The signal is grounded through contacts 1R and 2R of K-1101 when it is not energized. The signal is coupled to amplifier V-1003A through capacitor C-1015.

In addition to the audio signal being coupled to the grid of V-1003A, there is a negative bias from the squelch circuit, V-1008 and V-1013B, which is sufficient to cut off V-1003A if the level of audio signal is not high enough. The output of V-1003A is coupled through C-1016 to phase inverter V-1003B and sidetone amplifier V-1004B. The various conditions that must be met before there is an output from V-1003A are: SERVICE SELECTOR switch (U) S-1101 in PHONE position, press-to-talk button on phone depressed, and squelch circuit receiving an audio signal of sufficient level.

(5) SQUELCH CIRCUIT.—To prevent transmission of noise when the audio signal is not present, the squelch circuit prevents amplification by the audio chain by biasing the grid of audio amplifier V-1002B below cutoff unless there is an audio signal. The squelch circuit consists of a multivibrator, V-1008, a crystal rectifier, CR-1002, and limiter V-1013B.

(a) SQUELCH MULTIVIBRATOR V-1008. — The audio signal as developed at the output of the cathode follower, V-1003A, is coupled through capaci-

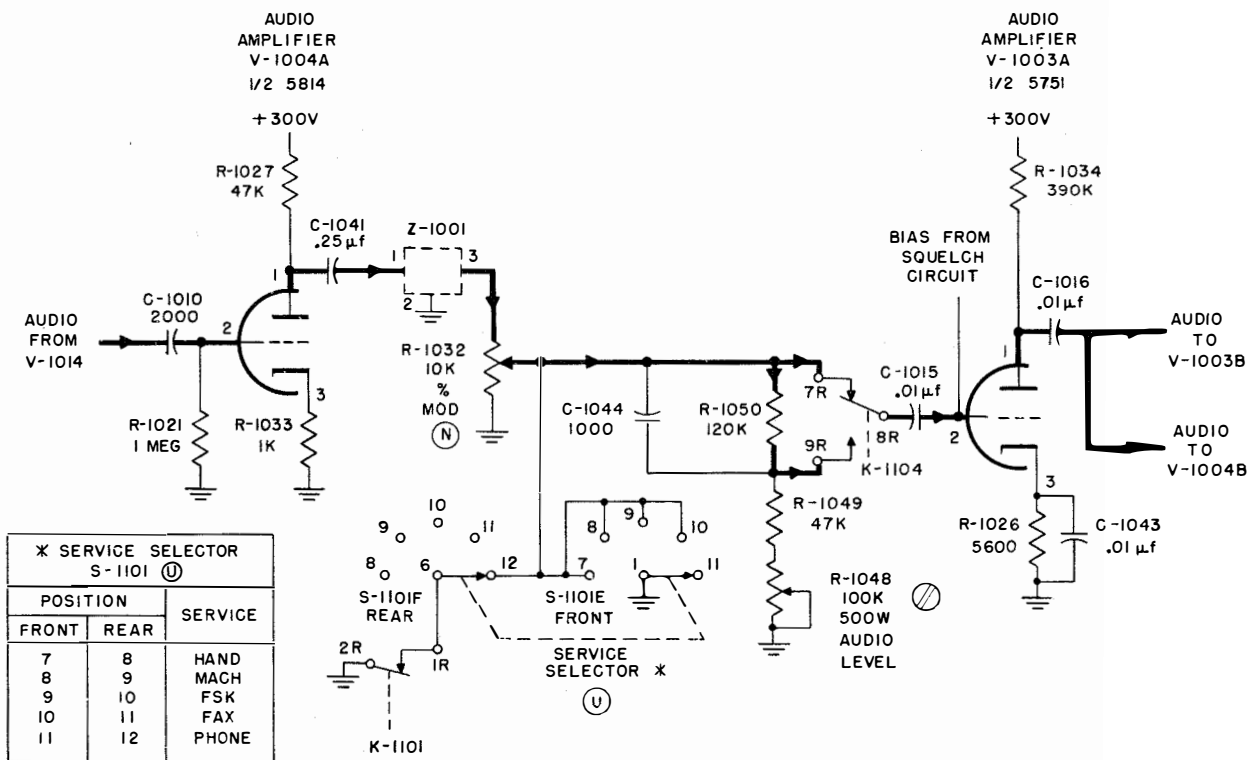


Figure 2-72. Audio Amplifiers V-1004A and V-1003A, Simplified Schematic

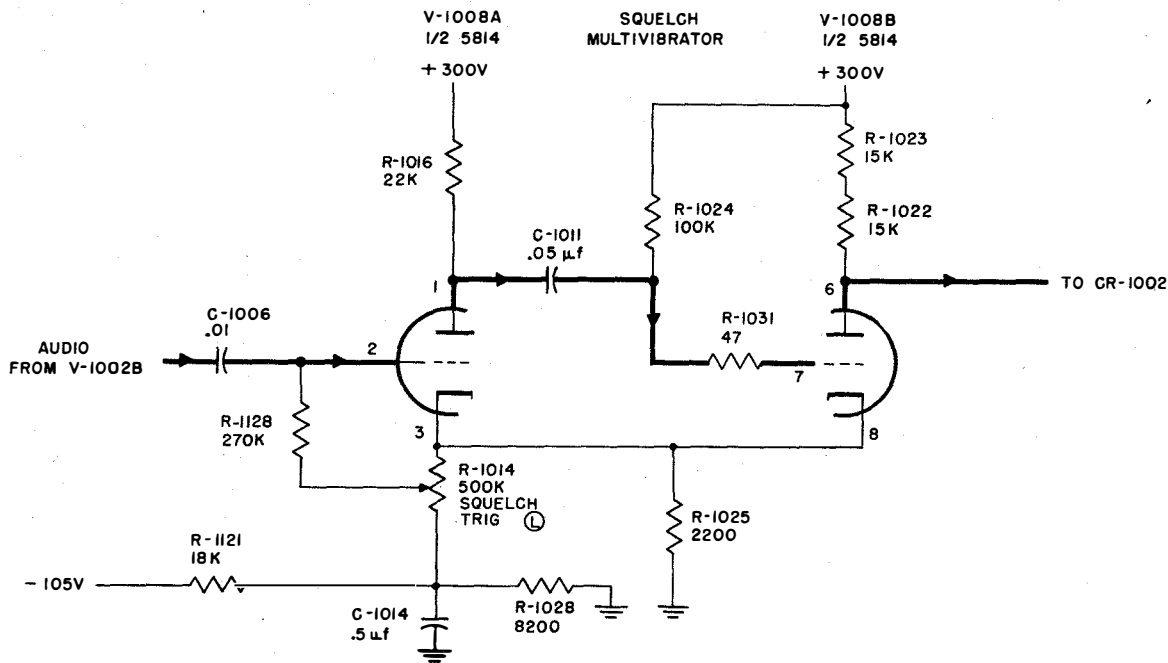


Figure 2-73. Squelch Multivibrator V-1008, Simplified Schematic

tor C-1006 to the grid of V-1008A, pin 2 (figure 2-73). Resistors R-1121, R-1028, R-1014, and R-1025 form a divider network from -105 volts to ground. This produces a potential of -30 volts at the junction of R-1121, R-1014, and R-1028. R-1014 is the SQUELCH TRIG. control \odot , the arm of which is tied to the grid of V-1008A through grid-leak resistor R-1128. With control \odot turned all the way down, the grid of V-1008A is at -30 volts, but V-1008B, whose grid is tied to +300 volts through R-1024, and R-1031, conducts heavily, causing a positive voltage across cathode resistor R-1025 of about +20 volts. As R-1025 is a common cathode resistor for both V-1008A and V-1008B, the voltage across it, together with the -30 volts on the grid, biases V-1008A well below cutoff. Turning the SQUELCH TRIG. control \odot up gradually reduces the grid-to-cathode bias on V-1008A. The audio signal coupled to the grid of V-1008A must be large enough to overcome the grid-to-cathode bias to affect the operation of the squelch multivibrator. When the positive peaks of the signal are above the minimum level established by the SQUELCH TRIG. control \odot , R-1014, signal is applied to the control grid of V-1008A; this tube begins to conduct, causing its plate voltage to decrease. The decrease of plate voltage of V-1008A is coupled through capacitor C-1011 to the grid of V-1008B, pin 7, which causes the current in V-1008B to decrease, which, in turn, increases the plate voltage of V-1008B, pin 6. The decrease in plate current of V-1008B also reduces the bias voltage developed across R-1025, causing V-1008A to conduct even more. The above action is rapidly accumulative until V-1008B is cut off. The resultant is that a positive pulse appears at the plate of V-1008B for every positive peak of

audio signal above the minimum level. These pulses are coupled to the squelch rectifier, CR-1002. Resistor R-1031 in the grid circuit of V-1008B is a parasitic suppressor.

(b) SQUELCH RECTIFIER CR-1002 AND LIMITER V-1013B.—Positive pulses from the squelch multivibrator are coupled to the squelch rectifier CR-1002 through capacitor C-1012 (figure 2-74). Resistors R-1121 and R-1028 form a voltage divider from -105 volts to ground so that there is -30 volts present at the junction of R-1121 and R-1028. When there are no positive pulses, this negative voltage is connected to the grid of audio amplifier V-1003A, pin 2, through R-1030, the high back-resistance of the crystal rectifier CR-1002, R-1029, and R-1129, which biases V-1003A below cutoff. When there are positive pulses, they appear across R-1030 and CR-1002 conducts. C-1013, R-1029, and C-1052 act as filter network to the output to the grid of V-1003A. The filtering action is such that voltage on the grid of V-1003A becomes the value of the pulse superimposed on the d-c negative bias, which will raise the grid of V-1003A above cutoff, allowing it to amplify the audio signals being received from amplifier V-1004A. The time constants involved in the filter components are so large with respect to the period of even the lowest audio signal, the bias on V-1003A will be essentially constant and at the level needed to keep V-1003A operating in the linear portion of its characteristic. A further safeguard of this is given by the action of the limiter diode, V-1013B. If the positive pulses received from the multivibrator should be of high enough amplitude to raise the resultant voltage applied to V-1002B grid above ground, the plate of V-1013B becomes more positive than its cathode, which

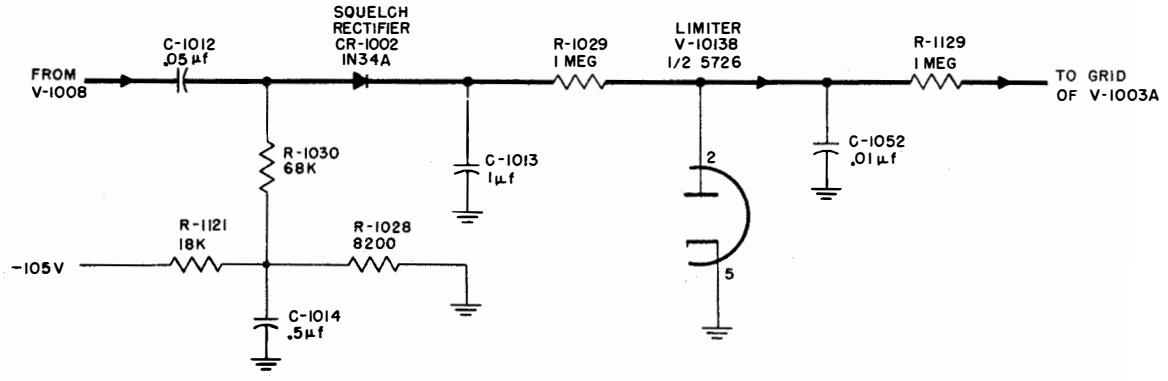


Figure 2-74. Squelch Rectifier CR-1002 and Limiter V-1013B, Simplified Schematic

is grounded. It conducts heavily, limiting the voltage applied to V-1003A to a maximum of zero volts with respect to ground. Additional peak voltages above ground appear across resistor R-1029.

(6) SIDETONE AMPLIFIER V-1004B.—For monitoring purposes, the output of audio amplifier V-1003A is coupled through C-1053 (figure 2-75) to a voltage divider comprised of R-1144 and R-1143. A reduced portion of this signal, obtained from the junction of R-1144 and R-1143, is connected through contacts 12 and 6 of S-1101D rear, when SERVICE SELECTOR switch (U) S-1101 is in the PHONE position, to the grid of sidetone amplifier V-1004B. The output of V-1004B is coupled by an output transformer, T-1005, to three monitoring outputs: the HAND SET receptacle, J-1106, the SIDETONE jack, J-1104, and to the remote radiophone unit. The output to J-1106 and J-1104 is under control of SIDETONE attenuator (W) E-1003, which is an L-pad. Besides acting as volume control for the

sidetone output, E-1003 also acts as an impedance matching network which presents a constant impedance to the output transformer, T-1005, independent of the setting of E-1003. Full sidetone output is supplied to the radiophone unit, which is equipped with its own L-pad.

An additional audio signal is applied to V-1004B during hand-key and machine-key operation through S-1101D rear contacts 8 and 6 when SERVICE SELECTOR (U) is in BAND and contacts 9 and 6 when in MACH, and is amplified in a similar manner. Paragraph 7c(8) discusses this signal and its purpose.

(7) AUDIO OUTPUT CIRCUIT.—The audio output circuit receives the audio signal from amplifier V-1003A. The signals are fed to a phase inverter which produces two signals of equal amplitude, but opposite phase. These two signals are coupled to a push-pull cathode follower stage which acts as a driver for the

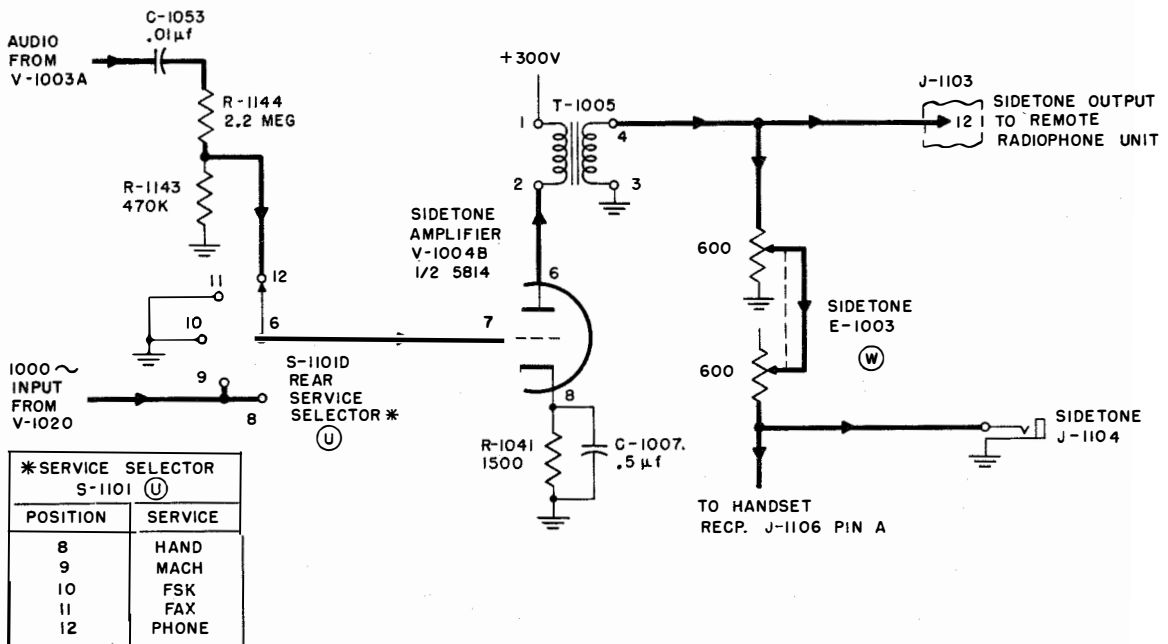


Figure 2-75. Sidetone Amplifier V-1004B, Simplified Schematic

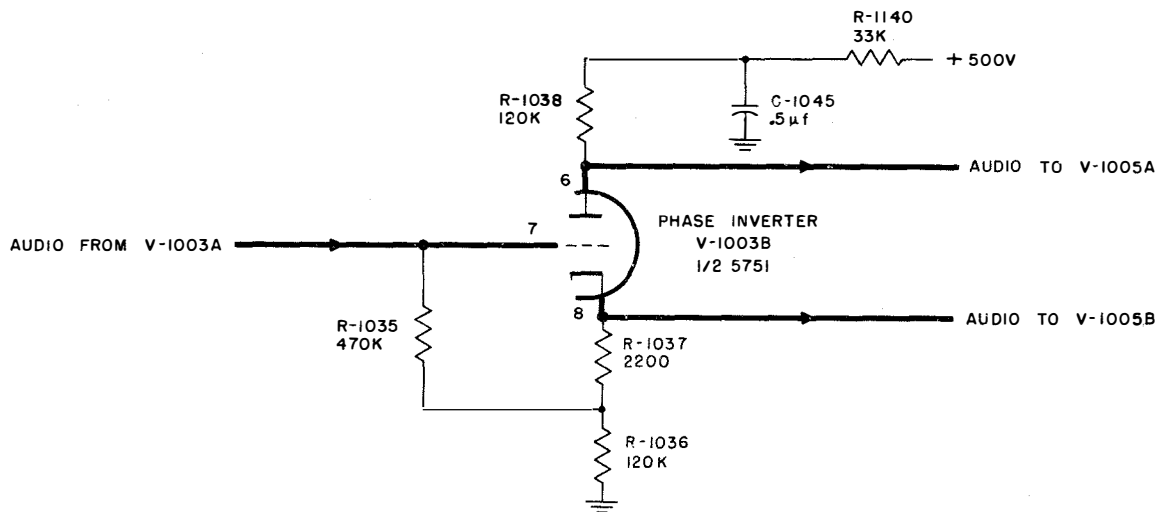


Figure 2-76. Phase Inverter V-1003B, Simplified Schematic

push-pull power amplifiers that constitute the last stage of amplification of the audio amplifier chain. In the AN/SRT-14, the final audio output is fed directly to the RFA. In the AN/SRT-15 and 16 there are audio outputs of two levels, depending on the power level at which the transmitter is working: 100 watts or 500 watts. In 500 watts, the 6-watt audio output from the LLRM is fed to HLRM for further amplification. In 100 watts, the 50-watt audio output from the LLRM is fed to the HLRM, where it is switched through to the RFA.

(a) PHASE INVERTER V-1003B. — The audio signal from V-1003A is fed to the grid of phase inverter V-1003B (figure 2-76). One output is taken from the cathode and one from the plate. Values of plate load resistor R-1038 and cathode resistors R-1037 and R-1036 are equal so that the two output voltages will be of equal amplitude, though opposite in phase. The amount of degenerative bias as established by connecting the grid, through R-1035, to the junction of cathode resistors R-1037 and R-1036 is such that the amplitude of the two outputs is approximately the same as the input level of the signal to this stage. R-1140 and C-1045 decouple this stage from the +500-volt plate supply.

(b) PUSH-PULL CATHODE FOLLOWERS V-1005A AND V-1005B.—The push-pull cathode followers V-1005A and V-1005B (figure 2-77) act as drivers for the push-pull power amplifiers, V-1006 and V-1007. As the power amplifier stage acts as a class AB₂ push-pull amplifier, the push-pull cathode follower tubes supply energy to a low impedance during the portion of the cycle that the grids of the power amplifier draw current. With the SERVICE SELECTOR switch (U), S-1101, in the PHONE position, the voltage divider action of R-1051 and R-1052 from -220 volts to ground puts a d-c potential of -40 volts on the grids of the push-pull cathode followers, through contacts 12 and 6

of S-1101E rear. As the tubes are returned to -220 volts, the cathode followers conduct during no-signal conditions so that the potentials at the cathodes are approximately -40 volts. The cathodes are tied directly to the grids of the power amplifiers, which sets the d-c bias of the power amplifiers. Signals of equal amplitude but opposite phase from the phase inverter are coupled to the grids of the push-pull cathode follower, V-1005A, pin 2, and V-1005B, pin 7, through capacitors C-1017 and C-1018 respectively. When the signal reaches -40 volts in amplitude, the grids of the power amplifiers go positive with respect to their cathodes and start to draw grid current, presenting an impedance to the cathode followers of approximately 1,000 ohms during the portion of the signal cycle that drives the grids of the power amplifiers positive. The cathode followers can supply the grid current to this low impedance for the maximum signal peak of +10 volts power amplifier grid-to-cathode voltage, derived from a 50-volt peak signal impressed on a -40-volt bias, without requiring the grid of the cathode followers to go positive. This means that the required driving energy can be supplied to the power amplifier while maintaining a high impedance to the input audio signal by the use of the cathode followers.

The normal function of the audio amplifier chain during hand-key and machine-key operation is inoperative. Therefore, the push-pull cathode followers coupled with the power amplifiers are used for an auxiliary function during these two modes of operation. The fact that the power amplifiers use +500 volts for a plate supply is utilized to provide a dumping circuit to eliminate transient voltage variations imposed on the +500-volt power supply (see paragraph 5b) when the transmitter is keyed. As the input to the push-pull cathode followers is the first point at which a control of the action of the push-pull amplifiers can be introduced, the dumping control is fed to the grids of the cathode followers through SERVICE SELECTOR switch (U)

S-1001E rear when in either the HAND or MACH position. The +500-volt supply provides plate voltage for the IPA and screen voltage for the PA (the latter in 500 watts only) in the RFA (paragraphs 10c(2) and 10d(2)). In space condition the RFA is keyed off and the IPA plate current and PA screen current are at a minimum, while in mark they are at maximum. If these sudden changes in load current drawn from the +500-volt supply are not modified, transient voltages will appear across the filter chokes, L-501 and L-502 (figure 2-61). At the start of mark condition, the polarity of the transient voltage will be such as to oppose the sudden increase in current, thus causing a dip in the power supply output voltage. Conversely, at the start of space condition, the transient voltage will be aiding, opposing the sudden decrease in current, thus increasing the supply output voltage. The function of the dumping circuit is to provide a load during space condition only, to compensate for the reduction in load current when the IPA is keyed off. Thus the load to the +500-volt supply will be approximately equal during mark and space, eliminating the cause of the transient voltages. This is accomplished by supplying a keying voltage from the keying circuit (paragraph 7c(5)) of -65 volts during mark and zero volts during space to the grids of the push-pull cathode followers. These voltages are followed approximately at the cathodes, which are tied directly to the grids of power amplifiers. During space, with the grids at zero, the power amplifiers conduct, while during mark the power amplifiers are biased below cutoff by the -65 volts. During space, when the tubes conduct, the voltage developed across the common cathode resistor, R-1045,

acts as a degenerative bias so that the two tubes draw 120 ma total from the +500-volt supply, which is equivalent to the reduction caused by keying of the RFA.

(c) POWER AMPLIFIERS V-1006 AND V-1007.—The control grids of the power amplifiers, V-1006 and V-1007, pins 3 (figure 2-78), are tied directly to the cathodes of the preceding cathode follower stage. As stated in the preceding discussion, the no-signal grid bias on the control grids of the power amplifiers is approximately -40 volts. With a screen voltage of +300 volts and a plate supply of +500 volts through the primary of modulation transformer T-1004, this value of bias is such that this stage operates as a class AB₂ push-pull amplifier, which provides high power outputs with high plate efficiency and low distortion. With the SERVICE SELECTOR switch (U), S-1101, in the PHONE position, the common cathode resistor, R-1045, to ground is shorted out through contacts 6 and 12 of S-1101C rear. In the HAND and MACH positions, R-1045 is in the circuit, adding degeneration so the push-pull amplifiers operate at the proper current drain values required for the dumping action.

Modulation transformer T-1004 is provided with two secondaries: one, the 50-watt secondary, is used only during 100-watt operation of the transmitter group; the other, the 6-watt secondary, is used only during 500-watt operation. The output of the 6-watt secondary is connected through contacts 7L, 8L and 9L, 10L of energized relay K-1104 to grids of the amplifiers in the HLRM. Negative bias of 50 volts for the HLRM

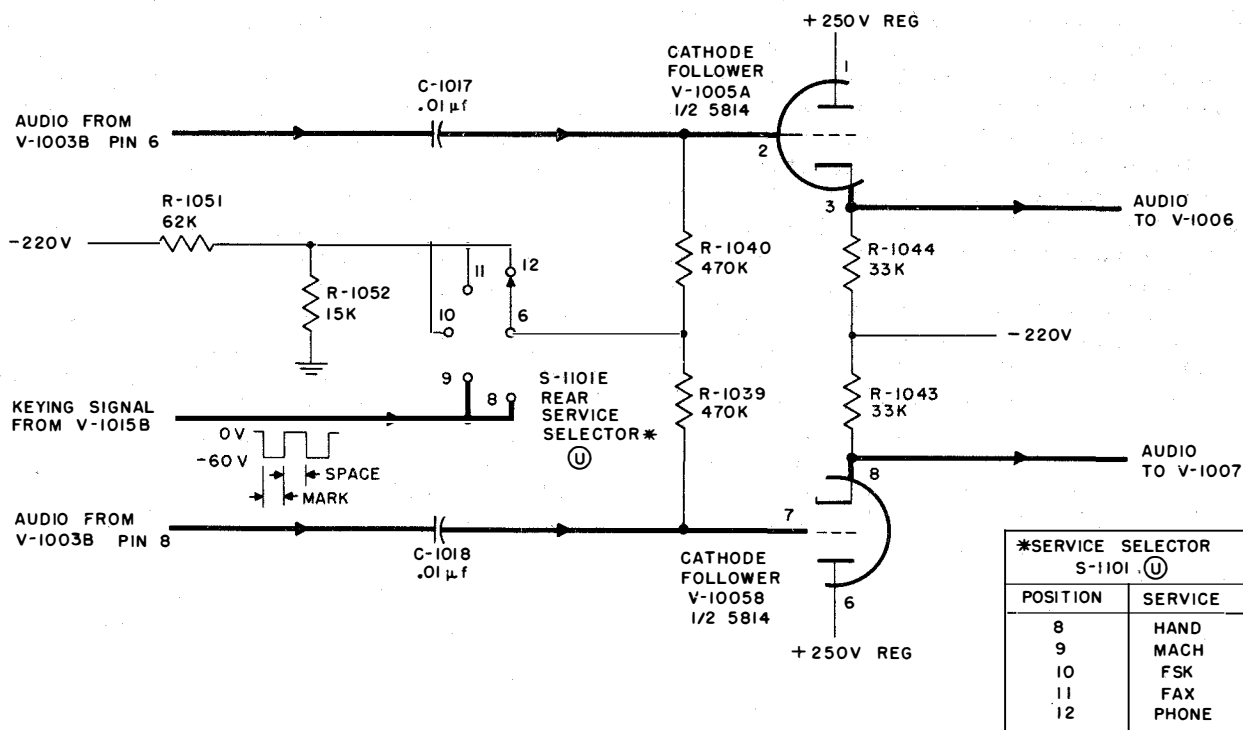


Figure 2-77. Push-Pull Cathode Followers, V-1005A and V-1005B, Simplified Schematic

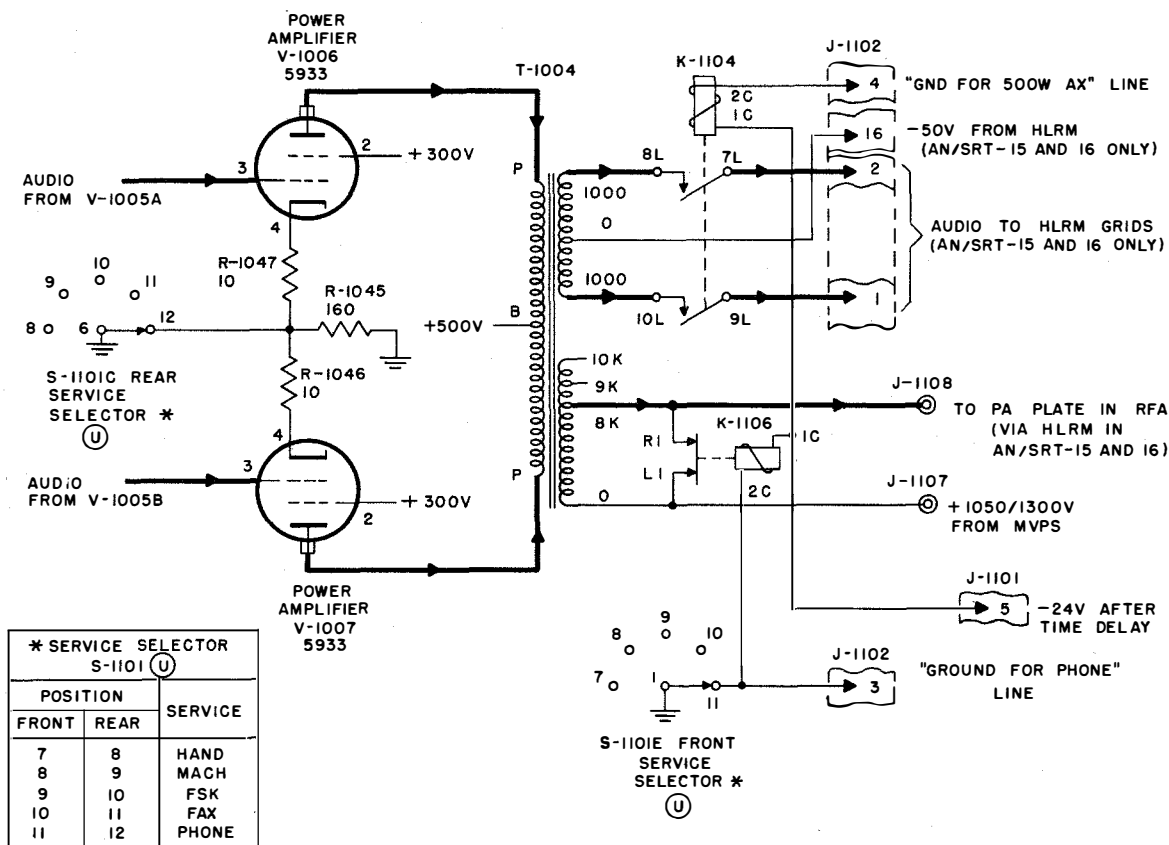


Figure 2-78. Power Amplifiers V-1006 and V-1007, Simplified Schematic

grids is supplied from the HLRM through the center tap on the 6-watt secondary. K-1104 energizes from “-24 V after time delay” to the “ground for 500 W” AX line. Therefore, in the AN/SRT-14 (see Note in paragraph 10e(1)), and in the AN/SRT-15 and 16 in 100-watt operation, K-1104 is unenergized, and the output of the 6-watt secondary is open circuit. Unless relay K-1106 is energized, the 50-watt secondary of T-1004 is short-circuited by contacts L1, R1 of K-1106, and plate voltage (+1,050/+1,300 volts) is delivered through these contacts to the final amplifier in the RFA. In the AN/SRT-14, this plate voltage is delivered directly to the RFA, while in the AN/SRT-15 and 16, it is delivered to the RFA via a switch in the HLRM. With SERVICE SELECTOR switch (U) S-1101 in the PHONE position, K-1106 is operated from ground through contacts 1 and 11 of S-1101E front to “-24 V after time delay”. This source of ground potential is known as the “ground for phone” line and is also utilized in the control circuits of the RFA, MVPS, and HVPS. With K-1106 energized, the short is removed from the 50-watt secondary and the plate supply voltage to the RFA is amplitude-modulated by the 50-watt audio signal.

c. KEYING CIRCUIT.—In hand-key operation, the keying circuit accepts keying signals and produces signals which turn the carrier on and off. In machine key, keying signals are sent to the keying circuit from teletype or

other machine-key equipment, which also turns the carrier on and off. In both hand-key and machine-key operation, an audio oscillator produces an audio signal for aural monitoring of the keying signal. In FSK operation keying signals are received by the keying circuit from machine-key equipment, and signals are produced that control the operation of the frequency-shift oscillator in the RFO, and the audio oscillator produces a signal to phase-modulate the carrier to eliminate selective fading effects. In phone operation the press-to-talk button on the phone sends keying signals to this circuit, which also produces signals to turn the carrier on and off. The keying circuit consists of the keying relay, K-1101, press-to-talk relay K-1107, buffer V-1015A, keying control V-1016, keying multivibrator V-1017, dumping cathode follower V-1015B, limiter V-1018, keyer V-1019, and audio oscillator V-1020. The outputs of the keying circuit and their functions are listed in table 2-16.

(1) KEYING INPUT CIRCUIT.—SERVICE SELECTOR switch (U) S-1101A rear (figure 2-80) selects the keying input to the keying circuit. In hand-key and phone operation, the keying signals are introduced through the action of the keying relay, K-1101. With the LOCAL-REM switch (X) S-1106 in the REM position, the keying line from a remote radiophone unit is connected to the keying relay through contacts 8F and 9F of S-1106. When a hand key is used, ground

TABLE 2-16. FUNCTIONS OF KEYING
CIRCUIT OUTPUTS

| OUTPUT | DELIVERED TO | FUNCTION |
|----------------------------------|---------------------------------|--|
| RF keying signal | Buffer in RFA and output of RFO | To key the carrier |
| FSK keying signal | FS oscillator in RFO | Control frequency of FSO |
| Keying signal to dumping circuit | LLRM | Load compensation for +500-volt power supply |
| 200-cycle signal | FS oscillator in RFO | Phase-modulate the FSO |
| 1,000-cycle signal | Sidetone amplifier in LLRM | Monitoring of keying signals |

is put on the keying line when the key is down (mark) and removed when the key is up (space). The presence of ground on the keying line actually operates the antenna switching relay, K-1306 in the RFA, which, in turn, operates the keying relay, K-1101. A discussion of this action is found in paragraph 10e(2). For the purpose of this discussion, it serves to say that the keying relay, K-1101, follows the presence or absence of ground on the keying line. When in phone operation, the press-to-talk button also supplies ground to the keying line when it is depressed. If the phone is connected locally, S-1106 is in the LOCAL position and the ground from press-to-talk button or the key operates K-1107 from the well-filtered -12-volt d-c supply. With K-1107 operated, ground is fed to K-1101 through contacts 5L and 4L of K-1107, and contacts 7F and 9F of S-1106. The TEST KEY (⊕), S-1108, parallels the keying line so that the depressing of S-1108 also supplies a ground to operate K-1101. With SERVICE SELECTOR (Ⓢ) in FSK or FAX, the keying line is connected to the RFO output stage and the RFA buffer stage through contacts 16 and 6 or 11 and 6 of S-1101B rear. The purpose of this connection is covered in paragraph 7c(7).

Two gas tube voltage regulators, V-1021 and V-1022, supply a regulated -105-volt and a regulated +105-volt supply respectively for use in the keying circuit. With -105 volts connected to 4R of K-1101, +105 volts is applied to contact 6R of K-1101. In hand-key operation, when the key is depressed (mark), K-1101 operates and +105 volts is connected through contacts 6R and 5R of K-1101, resistor R-1074, contacts 8 and 6 of S-1101A rear, contacts 10R and 8R of S-1107 (Ⓢ) in the OPER position and resistor R-1075 to ground. When the key is up (space), K-1101 is not energized and -105 volts is now applied through contacts 4R and 5R of K-1101 and through the same network as mentioned above. Resistors R-1074 and R-1075 act as a voltage divider, with the output, to the buffer stage following, being taken from their junction. The resultant is that mark and space voltages of +85 volts and -85 volts, respectively, are supplied at the grid of the buffer for hand-key operation. In phone operation the same operation takes

place except that the press-to-talk button takes the place of the hand key with the result that the +85 volts appears at the grid of the buffer when press to talk is depressed and -85 volts when press to talk is released.

In machine-key and FSK operation, the source of keying signal is from a machine keyer (figure 2-79). In neutral keying this signal varies from zero for space to a minimum of +30 volts for mark, while in polar keying the signal varies between a negative signal for space and a positive signal for mark of equal amplitude (whose amplitude is a minimum of 30 volts). These signals are fed directly to the grid of the buffer stage through contacts 9 and 6, for MACH operation, or contacts 10 and 6, for FSK operation, of S-1101A rear and through contacts 10R and 8R of S-1107 in the OPER position.

A permanent mark or space signal can be produced at the grid of the buffer by the action of S-1107. Setting this switch to MARK connects +105 volts to the grid of the buffer through contacts 11R and 8R of S-1107. In SPACE, S-1107 connects -105 volts, through its contacts 9R and 8R, to the buffer grid.

In addition to providing keying voltages for the keying circuit, the keying relay also controls the action of the stand-by relay, K-3005, in the LVPS. The operation of K-3005, in turn, provides the "-24 V after standby" which controls the operation of the MVPS, HVPS, and HLRM, the latter two in the AN/SRT-15 and 16 only (see paragraphs 9b, 4d, 5b, 5d and 6b). The ground potential to operate K-3005 is furnished through the PUSH TO TURN switch, S-1110, and contacts 3R and 2R of energized K-1101. In hand-key operation only, the action of K-1101 in controlling relay K-3005 is bypassed by a permanent ground supplied for the stand-by relay line through contacts 1 and 7 of SERVICE SELECTOR switch (Ⓢ) S-1101A front. As the power supplies controlled by K-3005 cannot follow the keying signals, this ground keeps them energized at all times. In other modes of transmission, the transmitter cannot go on the air unless K-1101 is energized, supplying the ground to operate K-3005. In machine-key, FSK

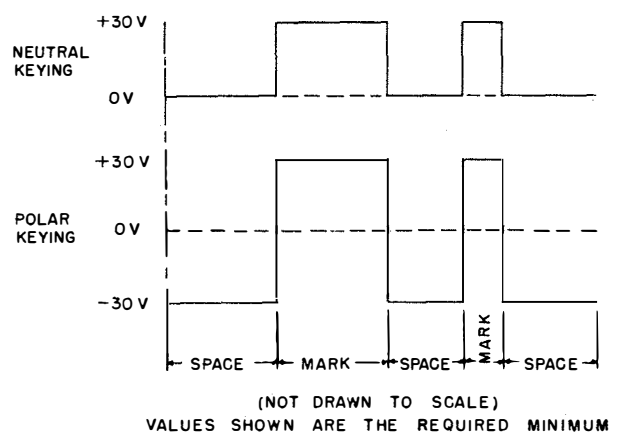


Figure 2-79. Machine Keying Input Signals, Voltage Wave Forms

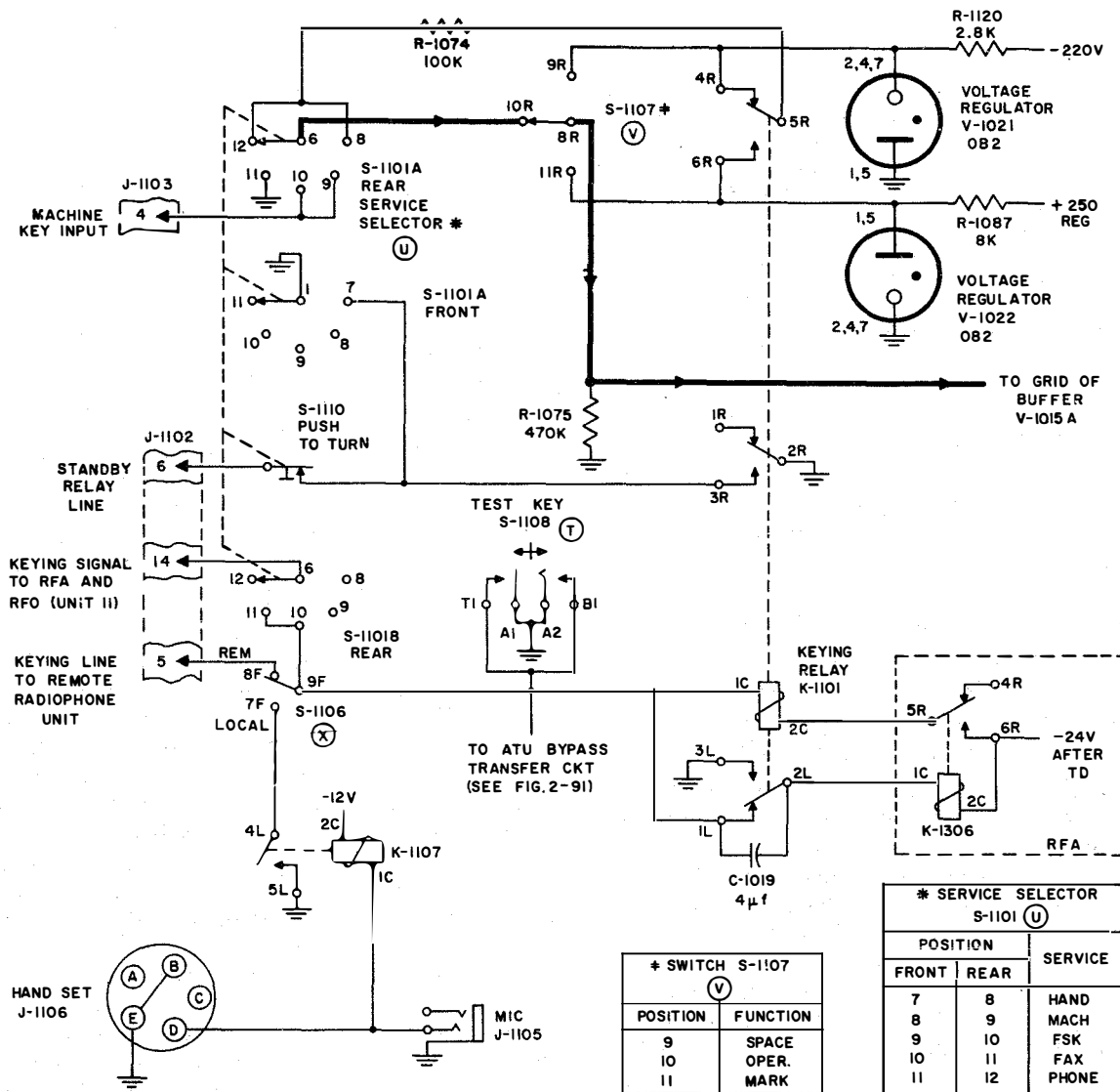


Figure 2-80. Keying Input Circuit, Simplified Schematic

and facsimile transmission, a ground is supplied over the keying line from the remote radiophone unit that energizes K-1101 and provides a "standby-operate" control from the remote radiophone unit. In phone operation, K-1101 is operated only when the press-to-talk button is depressed, either locally or remotely. This means that the power supplies controlled by K-3005, which, in turn, is controlled by K-1101, are on, in phone operation, only when press to talk is depressed.

(2) BUFFER V-1015A.—The buffer, V-1015A (figure 2-81), is a cathode-follower stage whose purpose is to isolate the action of the keying control and the keying multivibrator, which follow, from the keying input signals. The cathode of V-1015A is power biased to -40 volts by the voltage-divider action of R-1083, R-1082, and R-1079 from the regulated +105 volts to the regulated -105 volts. The keying voltages for the different modes of operation as defined in the previous

paragraphs are connected to the grid, pin 2, of V-1015A and are reproduced approximately at the cathode, pin 3, with the following exception: because of the -40 volts power bias on the cathode, any negative keying signals applied to the grid larger than approximately 45 volts will drive V-1015A to cutoff, with the resultant that the maximum amplitude of a negative keying signal appearing at the cathode is about 40 volts.

(3) KEYING MULTIVIBRATOR V-1017 AND KEYING CONTROL V-1016.—Keying multivibrator V-1017 (figure 2-81) is a flip-flop multivibrator. In the key-up (space) condition V-1017B conducts, causing current to flow through the common cathode resistor R-1089, the voltage developed across R-1089 being sufficient to cut off V-1017A. Keying control V-1016B assures that V-1017B conducts and V-1017A is cut off during space. The plate of V-1016B is connected to the junction of R-1085 and R-1084 in the grid circuit of V-1017A. Disregarding the action of V-1016B, this

would be at about +5 volts during space with V-1017B conducting. The cathode of V-1016B during neutral keying is tied to the cathode of the buffer through contacts 2 and 1 of NEUT.-POLAR switch (R) S-1105 in the NEUT. position. During space this point is at +4 volts for neutral machine keying or -40 volts for hand keying. As these values are at or below the normal +5 volts to which the plate of V-1016B is tied, V-1016B conducts, effectively tying the junction of R-1085 and R-1084 to the space voltage appearing at the buffer cathode. This means that the grid circuit of V-1017A, during space, is at a lower potential than the grid circuit of V-1017B, causing the desired condition of having V-1017A cut off and V-1017B conducting. The same action occurs in polar keying, except that keying control V-1016B is connected so that its cathode goes to about +4 volts when the grid of the buffer is at -30 volts. This is accomplished by connecting the cathode of V-1016B to the tap of potentiometer R-1082 through contacts 2 and 3 of S-1105 in the POLAR position. This potentiometer is known as the POLAR SPACE control and is part of a voltage divider consisting of R-1083 and R-1082 connected from regulated +105 volts to the cathode of the buffer. In space, with a -30-volt keying signal on the grid, the cathode will be

about -27 volts. The setting of R-1082 will be such that to tap will be about +4 volts. Determination of the exact setting of R-1082 is covered in a succeeding paragraph covering conditions met when the keying signal changes from mark to space. With the multivibrator in the space condition, there is +100 volts on the plate of V-1017B and +235 volts on the plate of V-1017A.

As the keying signal changes from space to mark the potential of the buffer cathode starts to rise. As it reaches +5 volts, in neutral keying, or -27 volts in polar keying, keying control V-1016B no longer conducts and has no effect on the grid of V-1017A, which rises to about +10 volts. This still is not high enough to overcome the bias potential set up in the common cathode resistor, R-1089. As the mark potential rises higher, keying control V-1016A comes into action. The cathode of V-1016A is tied to the grid of V-1017A, which is at +10 volts. The plate of V-1016A is connected to the tap of potentiometer R-1079, which is the cathode resistor in the buffer circuit with one end tied to the buffer cathode and the other connected to regulated -105 volts. This potentiometer is known as the NEUTRAL-POLAR-MARK control. For keying control V-1016A to conduct, its plate must be +10 volts or higher. As

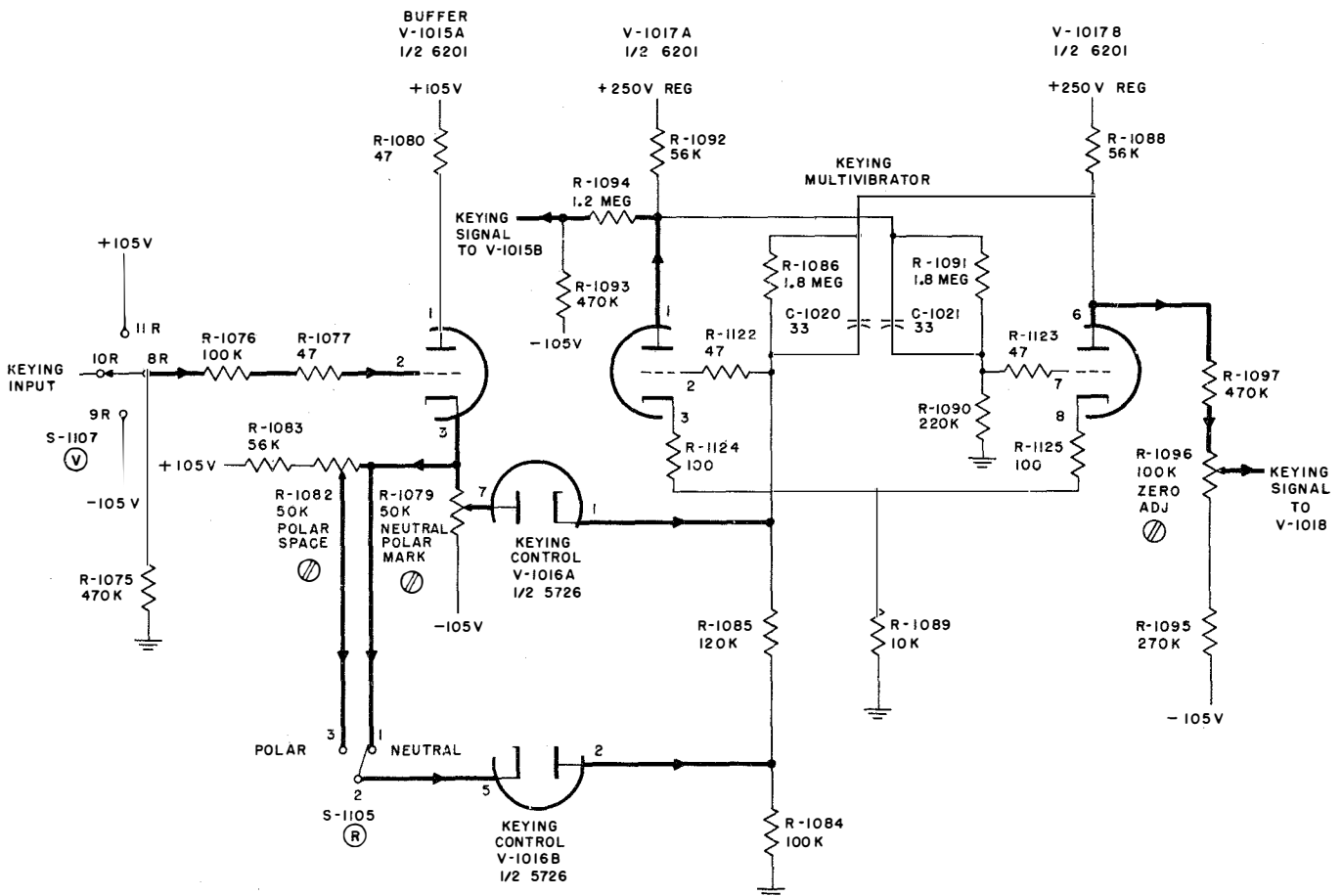


Figure 2-81. Cathode Follower V-1015A, Keying Control V-1016 and Keying Multivibrator V-1017B, Simplified Schematic

the mark voltage increases at the cathode of the buffer, the tap of R-1079 will reach +10 volts and V-1016A will conduct. As V-1016A conducts, it effectively ties the grid of V-1017A to the tap of R-1079. The tap of R-1079 is set so that as the mark signal reaches +30 volts at the grid of the buffer, the voltage at the tap, hence at the grid of V-1017A, will be sufficient to overcome the bias potential on the common cathode resistor R-1089, causing V-1017A to conduct. As V-1017A conducts, its plate voltage decreases. This decrease is coupled to the grid of V-1017B through the R-C network C-1021 and R-1091, reducing conduction in V-1017B, which increases the plate voltage of V-1017B. This increase is coupled through C-1020 and R-1086 to the grid of V-1017A, making the grid more positive and thereby increasing conduction in V-1017A still further. This action is rapidly cumulative and continuous until V-1017B is cut off and V-1017A is saturated. The multivibrator remains in this stage (V-1017B cut off, V-1017A conducting) as long as the positive (mark) keying signal appears at the buffer. The rapid change of voltage has been passed to the grid of V-1017A by C-1020. Now, with the keying signal remaining positive (mark), the grid of V-1017A returns to the steady state value of approximately +24 volts as C-1020 charges through the R-C network. This minimum grid voltage is still sufficient to keep V-1017A conducting heavily and V-1017B cut off. In mark the plate of V-1017B is at +235 volts and the plate of V-1017A is at +70 volts.

As the keying voltage changes from mark to space, for the multivibrator to return to the space condition described previously, the potential of the grid of

V-1017A must be lowered enough to cause reduction in the current flow of V-1017A, which will cause the resulting cumulative flip-flop. During the mark condition, the junction of R-1085 and R-1084, to which the plate of keying control V-1016B is connected, returns to about +11 volts. Therefore, when the keying signal reduces to a point where the cathode of V-1016B, which is tied to the cathode of the buffer in neutral keying and to the POLAR SPACE control R-1082 in polar keying, goes below +11 volts, V-1016B conducts, lowering the grid potential of V-1017A. In neutral keying, when the keying signal reduces to about +7 volts, V-1016B will conduct enough to lower the V-1017A grid below the saturation point and the flip flop will take place. In polar keying, the POLAR SPACE control R-1082 is set so that when the negative (space) keying signal reaches about -28 volts, the keying control, V-1016B, conducts enough to lower the grid potential of V-1017A below the saturation value and the multivibrator returns to the space condition.

(4) KEYING MULTIVIBRATOR OUTPUTS. —

The keying multivibrator, V-1017, has two outputs, one developed in the plate circuit of V-1017A, and the other, which is out of phase with reference to the first, developed in the plate circuit of V-1017B. Figure 2-82 shows the voltage wave forms at the two plates of V-1017 and the output voltages developed from them. The keying voltage obtained in the plate circuit of V-1017A is fed to the dumping cathode follower for use in the dumping function of the push-pull cathode followers in the audio amplifier chain of the LLRM to compensate for the reduction in load on the +500-volt power supply in space. The keying voltage developed in the plate circuit of V-1017B is fed to the limiter stage, thence to the keyer stage. In hand-key, machine-key, and phone operation, this keying voltage is limited to one value and is fed jointly to the buffer in the RFA and to the output stage of the RFO for the keying of the carrier. In FSK operation, this keying voltage is limited to a different value and is fed to the frequency-shift oscillator in the RFO.

(a) KEYING SIGNAL TO DUMPING CIRCUIT.—A keying signal of zero volts for space and -65 volts for mark is delivered to the dumping cathode follower, V-1015B. This range of voltages is obtained from a voltage divider connected from the plate of V-1017A through resistors R-1094 and R-1093 to regulated -105 volts. The output is taken from the junction of R-1094 and R-1093. In space, the plate of V-1017A is +235 volts and in mark it is +70 volts.

(b) KEYING SIGNAL TO LIMITERS AND KEYER.—A keying signal of approximately +25 volts for mark and -35 volts for space is delivered to the limiters and the keyer stages following. This range of voltages is obtained from a voltage divider from the plate of V-1017B, through R-1097, ZERO ADJ. control R-1096, and R-1095 to regulated -105 volts. In mark, the plate of V-1017B is +235 volts and in space it is +100 volts. The output is taken from the tap of the

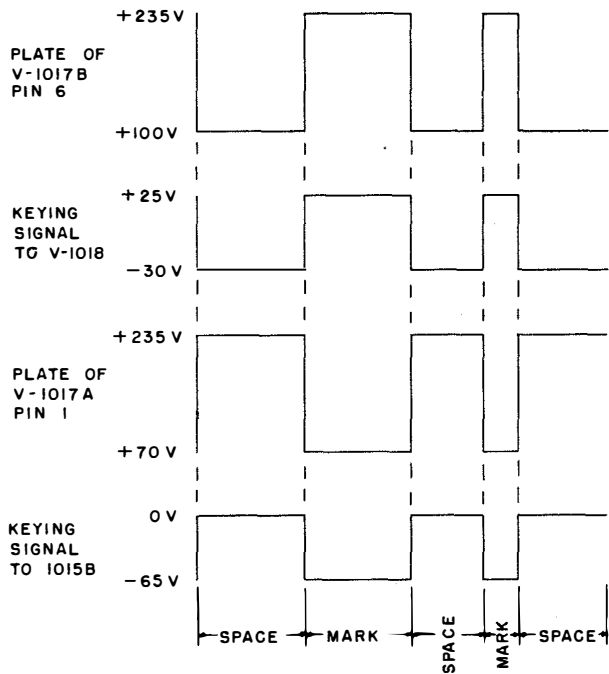


Figure 2-82. Keying Multivibrator Voltage Wave Forms, for Hand-Key and Machine-Key Operation

ZERO ADJ. control R-1096, which is set so the output space voltage is about -30 volts, which will make the output mark voltage about +25 volts. This is made adjustable to compensate for variances in the voltages appearing at the plate of V-1017B because of variances in characteristics of tubes that might be used in this application.

(5) **DUMPING CATHODE FOLLOWER.**—Keying signals to the dumping circuit are fed to the dumping cathode follower, V-1015B (figure 2-83), before being passed on to the push-pull cathode followers. The action of the dumping cathode follower is to provide a low impedance to the input to the push-pull cathode follower to reduce the time constant so the waveshape is not destroyed. The signal is fed to the grid of V-1015B from the multivibrator and controlled by the waveshaping capacitor, C-1022. R-1078 and R-1081 are parasitic suppressors. The output is taken directly from the cathode of V-1015B, with the voltages following closely to the input, which is zero volts for space and -65 volts for mark. The keying signals are connected to the push-pull cathode followers through SERVICE SELECTOR switch (U) S-1101E rear in the HAND and MACH positions. In FSK and FAX operation, the transmitter group is "on the air" continuously; thus no load compensation is required. In phone operation, load compensation is not required as the +500-volt supply is turned off when press to talk is up by the action of the keying relay, K-1101 (paragraph 7c(1)). A complete discussion of the dumping function is given in paragraph 7b(7)(b).

(6) **LIMITER V-1018.**—The keying signal from V-1017B, which is +25 volts for mark and -30 volts for space, is delivered to the limiter, V-1018A and V-1018B (figure 2-84). The keying signal is applied across a value of capacitance that is selected by the KEYING RATE switch (S), S-1109. The time constant involved in charging and discharging this capacitance gives the required rise and decay time to the keying signal waveshape. The faster the keying rate, the shorter is the decay and rise time, hence the smaller the value of capacitance. For any given keying rate, the decay and rise time of the pulses when the transmitter is in either HAND or MACH, c-w transmission should be longer than for FSK in order that the bandwidth of the side bands transmitted be kept to a minimum. Therefore, in HAND and MACH positions of the SERVICE SELECTOR (U), a second set of waveshaping capacitors comprised of C-1046, C-1047, C-1048, and C-1049 is connected in parallel, to lengthen the time constant, with the set of capacitors comprised of C-1023, C-1024, C-1025, and C-1026. The connection is made through S-1101F front contacts 7 and 1 for HAND or contacts 8 and 1 for MACH operation. Table 2-17 shows the value of capacitance and the capacitors employed for the various services and the different keying rates.

The plate, pin 7, of limiter V-1018A is tied to the tap of a potentiometer, R-1098. In FSK operation R-1098, known as the (-) LIMIT KEYER OUT control, is

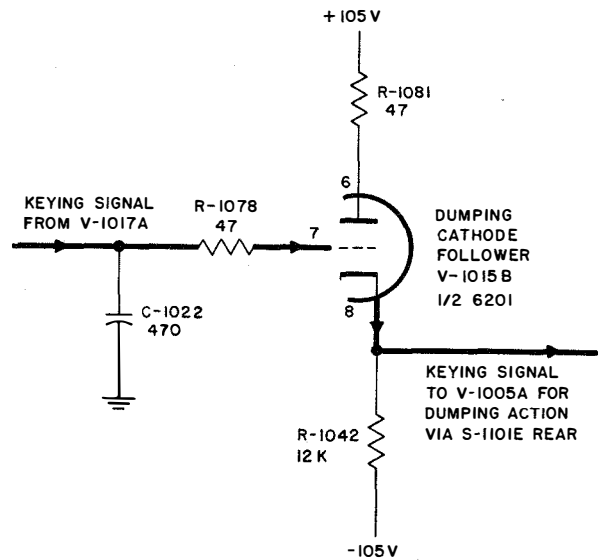


Figure 2-83. Dumping Cathode Follower, Simplified Schematic

TABLE 2-17. KEYING RATE SWITCH (S) S-1109

| SERVICE | KEYING RATE | CAPACITORS SELECTED | TOTAL CAPACITANCE |
|--------------|-------------------------|------------------------------------|-------------------|
| HAND or MACH | Teletype (23 dots/sec) | C-1023, C-1026, C-1049 in parallel | 0.0567 μ f |
| | Multiplex (60 dots/sec) | C-1023, C-1025, C-1048 in parallel | 0.035 μ f |
| | 200 words per minute | C-1023, C-1024, C-1047 in parallel | 0.023 μ f |
| | 400 words per minute | C-1023, C-1046 in parallel | 0.012 μ f |
| FSK or PHONE | Teletype (23 dots/sec) | C-1023, C-1026 in parallel | 0.0067 μ f |
| | Multiplex (60 dots/sec) | C-1023, C-1025 in parallel | 0.005 μ f |
| | 200 words per minute | C-1023, C-1024 in parallel | 0.003 μ f |
| | 400 words per minute | C-1023 | 0.002 μ f |

part of a voltage-divider network from regulated -105 volts through R-1105, R-1098 and contacts 9 and 1 of SERVICE SELECTOR switch (U), S-1101C front, to ground. R-1098 is adjusted for -10 volts at the tap. Therefore, any negative (space) keying signals in FSK operation are clipped at a maximum of 10 volts by the action of the limiting diode, V-1018A. In the other modes of operation the ground is removed from R-1098 by the action of the SERVICE SELECTOR switch (U), S-1101C front, and the plate of V-1018A is tied to -105 volts. As the maximum negative signal applied is 30 volts, no limiting action takes place and the negative signal applied to the keyer stage then is approximately 30 volts.

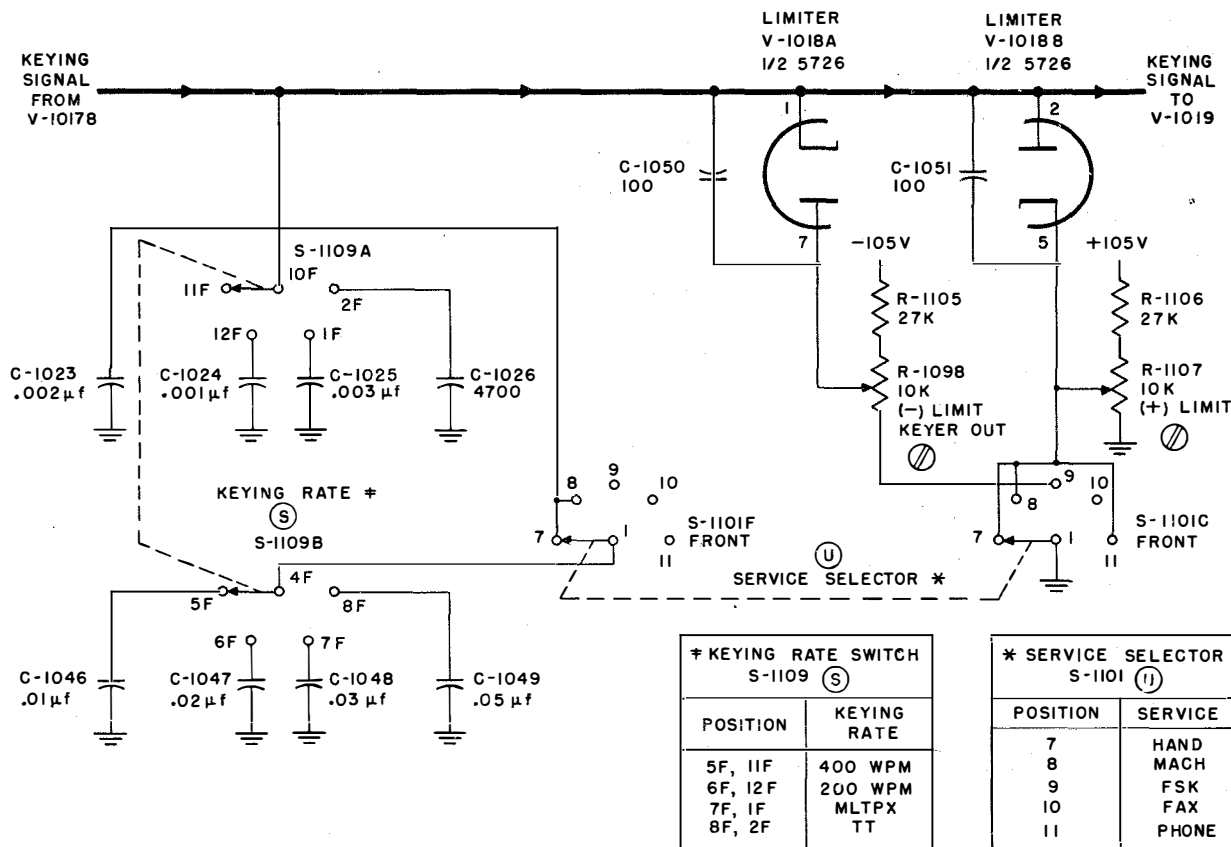


Figure 2-84. Limiter V-1018, Simplified Schematic

In hand-key, machine-key and phone operation, the cathode, pin 5, of limiter V-1018B is grounded through SERVICE SELECTOR switch (U) S-1101C front, through contacts 7 and 1 for HAND, 8 and 1 for MACH, and 11 and 1 for PHONE. In FSK operation, the cathode of V-1018B is connected to the tap of potentiometer R-1107, which is part of a voltage divider from regulated +105 volts, through R-1106, R-1107 to ground. R-1107, known as the (+) LIMIT control, is adjusted for +10 volts at the tap and the action of V-1018B clips positive (mark) keying signals at +10 volts. Therefore, positive (mark) signals in hand-key, machine-key and phone operation are clipped at zero, and they are clipped at +10 volts in FSK operation. Capacitors C-1050 and C-1051 are bypasses for the small amount of r-f energy that is picked up in the circuit wiring.

(7) KEYER V-1019.—The keyer, V-1019, is a cathode follower stage to provide a low impedance keying output supply (figure 2-85). The keying signals, as clipped by the limiters, are fed to the grids of the keyer, V-1019, which is a twin triode operating in parallel, through parasitic suppressors R-1099 and R-1100. The cathode load is made up of R-1103 and R-1102, which constitute a voltage divider with the output taken from the junction of the two. When the zero voltage mark keying signal is applied to the grid of the keyer, the

cathode is at about +2 volts. However, the mark signal as delivered to the buffer of the RFA should not go above zero; hence the output is taken at the junction of R-1103 and R-1102 to reduce the mark voltage from +2 volts to zero.

The output of zero volts for mark and -30 volts for space is the same in hand-key, machine-key, and phone operation and is used for the same purpose, namely, to cut off the buffer in the RFA and cut off the output stage of the RFO in the "key-up" (space) condition for the two keying modes or the press-to-talk "up" in the phone operation. Both the buffer in the RFA and the output of the RFO are keyed off to assure that the "key-up" radiation from the transmitter group is below the minimum allowable level of 400 micromicrowatts. In FSK operation, the output from the keyer, which is +10 volts for mark and -10 volts for space, is fed to the RFO to frequency-modulate the frequency-shift oscillator in the RFO.

SERVICE SELECTOR switch (U) S-1101B rear controls the keying input to the buffer in the RFA and the output stage of the RFO. In the HAND, MACH, and PHONE positions, the keying input is the output of the keyer as noted above. In HAND, the connection is through contacts 8 and 6 of S-1101B rear, in MACH through contacts 9 and 6, and in PHONE through 12 and 6. In FSK and FAX the keying input to the RFA

and RFO is connected to the keying line as noted in paragraph 7c(1). As long as the transmitter is in the "operate" condition by having the keying line closed to ground, this ground is connected through contacts 10 and 6 or 11 and 6 of S-1101B rear to the RFA buffer and RFO output stage, keeping the transmitter "on the air" continuously. At the instant the transmitter is placed in "stand-by" by opening the keying line, there is -24 volts on the keying line, through contacts 5R and 6R of antenna transfer relay K-1306 before it releases. This -24 volts will instantaneously cut off the RFO output and RFA buffer, to prevent arcing on contacts of K-1306 as it transfers the antenna lead from the RFA output to the receiver input (see paragraph 10e(2)).

The input to the frequency-shift oscillator in the RFO is connected through SERVICE SELECTOR switch (U) S-1101B front. In FSK this is the output of the keyer as described previously and is made through contacts 9 and 1 of S-1101B front. In FAX operation, the signal from the facsimile equipment is connected directly to the frequency-shift oscillator of the RFO through contacts 10 and 1 of S-1101B front. The other positions of this switch are grounded as the frequency-shift oscillator is not employed in hand-key, machine-key, or phone operations.

(8) AUDIO OSCILLATOR V-1020.—The audio oscillator, V-1020, figure 2-86, is a Wien-bridge oscillator with two outputs. In FSK operation, the output is a 200-cycle signal whose purpose is to phase-modulate the frequency-shift oscillator in the RFO, whenever it is necessary to prevent selective fading. Radio waves of

slightly different frequencies occasionally are affected in different ways by atmospheric conditions. In the case of modulated transmission involving side-band frequencies, the carrier and the side-band components may not be propagated in the same relative amplitude at the antenna. This effect, known as selective fading, causes distortion in the signal. Phase-modulating the carrier creates a narrow band of carrier frequencies, some of which may be expected to overcome the adverse conditions causing the fading, thus insuring better signal reception. The 200-cycle frequency is sufficiently high with respect to the highest keying rates to insure sufficient sampling of the keying signals over the band of carriers established. The amplitude of the 200-cycle signal from the audio oscillator is sufficient to produce a one-radian phase shift in the carrier. This amount of shift can be controlled between zero and one radian by a control mounted on the front panel of the RFO (see below). In hand-key and machine-key operation, the audio oscillator produces a 1,000-cycle signal during the key down (mark) condition that is fed to the sidetone amplifier in the audio chain for monitoring purposes.

Two basic conditions must be fulfilled to sustain oscillation. A feedback signal must be developed that is large enough to overcome the losses in the grid circuit and be in phase with the signal on the grid. The selection circuit for the feedback is a Wien bridge. Signals appearing at the plate of V-1020A are coupled through C-1020 to the grid of V-1020B, which is an amplifier and phase inverter. The signals appearing at the plate of V-1020B, being shifted 180° in phase with respect

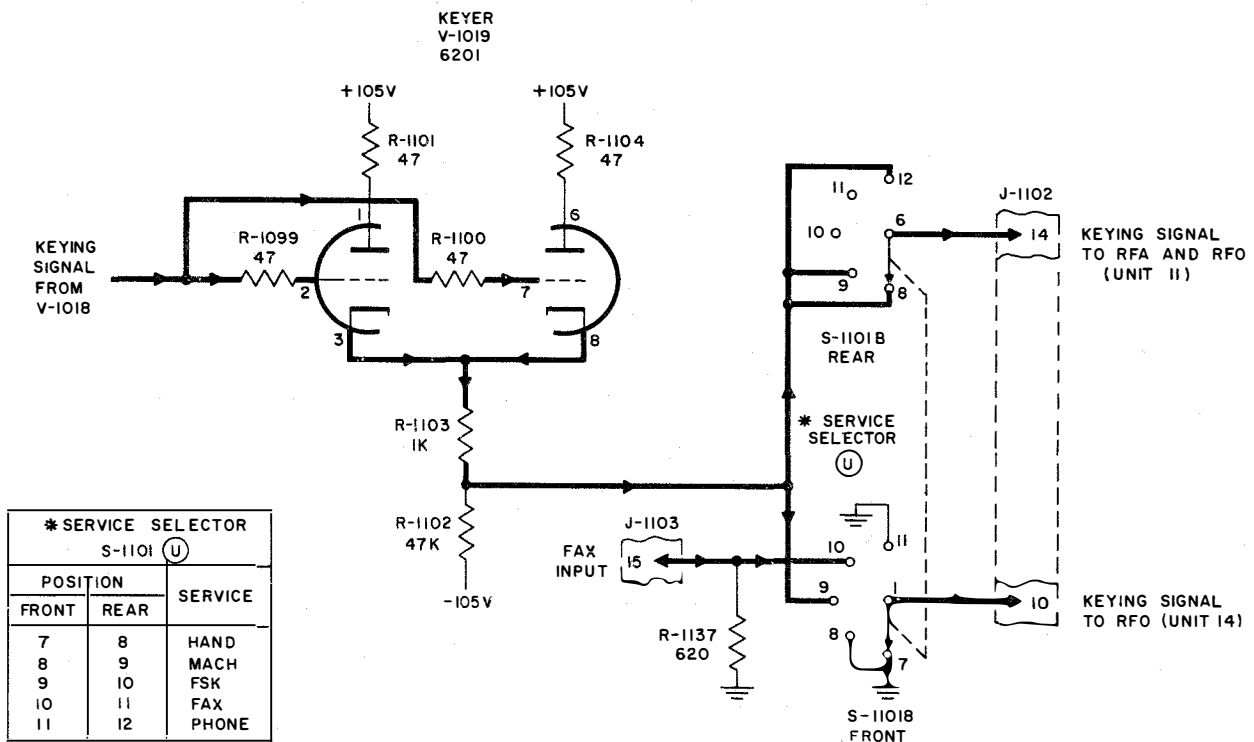


Figure 2-85. Keyer V-1019, Simplified Schematic

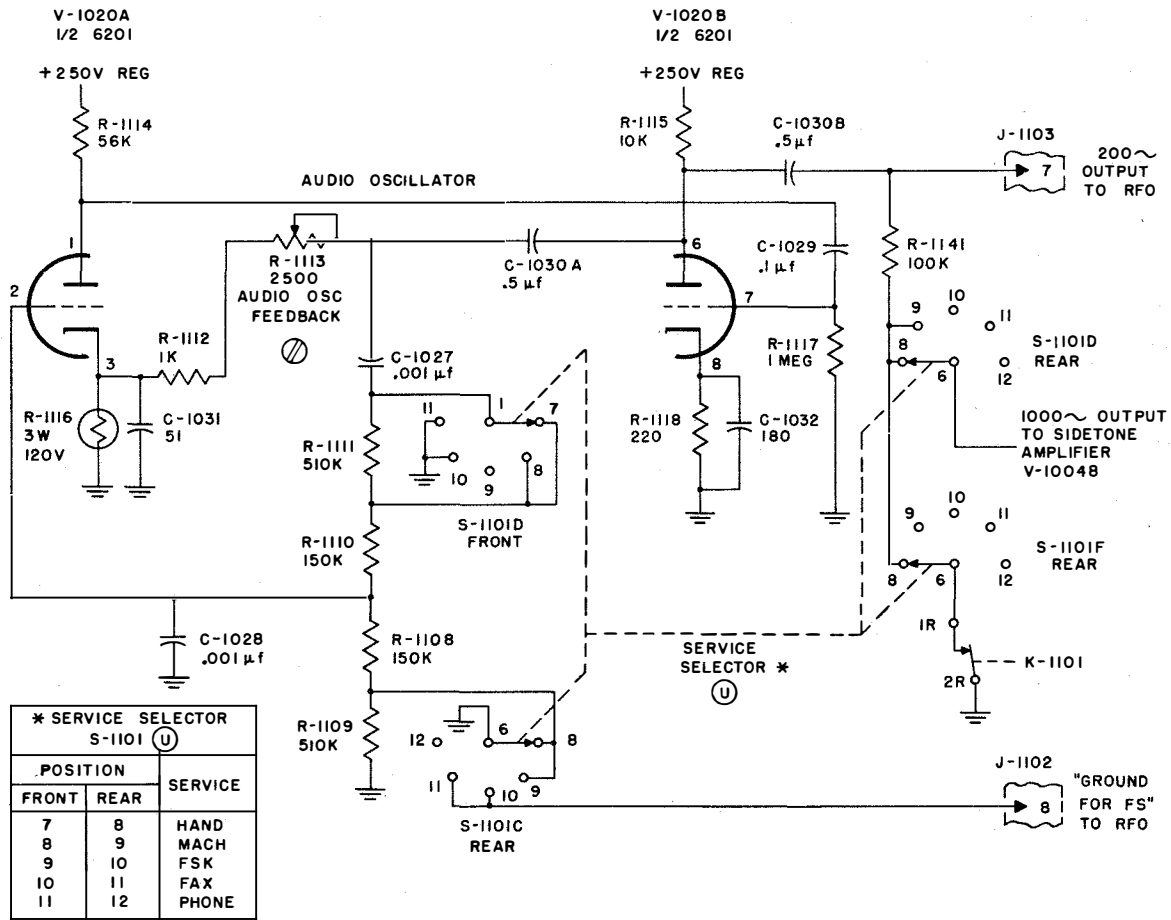


Figure 2-86. Audio Oscillator V-1020, Simplified Schematic

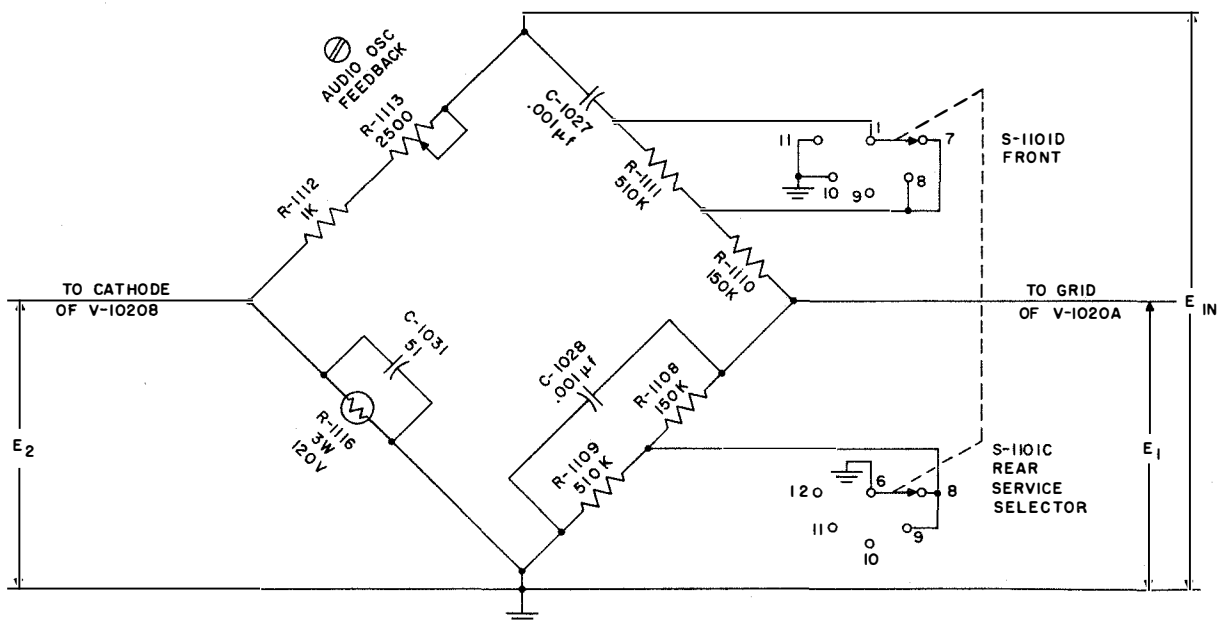


Figure 2-87. Wien Bridge Circuit, Simplified Schematic

to the grid, is now in phase with the signal on the grid of V-1020A. This signal is coupled to the bridge circuit through capacitor C-1030A.

Figure 2-87 shows the Wien bridge circuit. E_{IN} , the output of V-1020B, is the voltage applied across the bridge circuit. This voltage is developed across both the resistive half of the bridge (R-1113, R-1112, and R-1116) and the reactive half of the bridge. In FSK operation, the reactive half consists of C-1027, R-1111, R-1110, R-1108, R-1109, and C-1028. With the SERVICE SELECTOR switch \textcircled{U} , S-1101, in HAND or MACH position, R-1111 is shorted out through contacts 1 and 10 or 11 of S-1101D front, and R-1109 is grounded through contacts 6 and 8 or 9 of S-1101C rear, so that, in hand key or machine key, the reactive half of the bridge is composed of C-1027, R-1110, R-1108, and C-1028. A degenerative feedback voltage, E_2 , is obtained across R-1116 in the resistive half of the bridge as R-1116 is the cathode resistor for V-1020A. This voltage is in phase with E_{IN} , which, in turn, is in phase with the signal on the grid of V-1020A. A regenerative feedback signal, E_1 , obtained in the reactive half of the bridge, is applied to the grid of V-1020A at the junction of R-1110 and R-1108. At a frequency determined by the components of the reactive half of the bridge the regenerative voltage, E_1 , will be in phase with the signal at the grid of V-1020A and concurrently will be at a maximum amplitude that is equal to or slightly larger than the degenerative voltage, E_2 . This relative amplitude between E_1 and E_2 is controlled by the setting of AUDIO OSC. FEEDBACK control R-1113, which directly determines the amplitude of E_2 . At any other frequency E_2 will be out of phase and at a smaller amplitude, so the degenerative voltage, E_1 , which is independent of frequency, will suppress these frequencies. The resonant frequency of the bridge, when all the components in the reactive half are employed, is 200 cycles, which is the case for FSK operation. In hand-key and machine-key operation, with R-1111 and R-1107 removed by the above-described action of S-1101, the resonant frequency becomes 1,000 cycles. In FAX and phone operation, the regenerative feedback in the reactive half of the bridge is grounded through contacts 1 and 10 or 11 of S-1101D front, disabling the circuit.

In the cathode circuit of V-1020A, a 3-watt, 120-volt ballast lamp, R-1116, is used instead of a resistor to stabilize the amplitude of oscillation. If, for some reason, the amplitude tends to increase, the current through the lamp also tends to increase. This current increases the temperature of the lamp filament and its resistance becomes larger. This larger value of resistance in the bridge circuit previously described means that the degenerative feedback voltage is increased, thus reducing the gain of V-1020A and thereby holding the output voltage at a nearly constant amplitude. Keeping the amplitude of the voltage wave form small means that the oscillator tube, V-1020, operates in the linear portion of its characteristics, assuring that the output will be sinusoidal. C-1031 acts as an r-f bypass.

The output of the audio oscillator, V-1020, is taken from the plate of V-1020B and coupled through C-1030B. In FSK operation, the 200-cycle signal is fed to a voltage divider consisting of R-1119 and the F.S.K. PHASE MOD. control \textcircled{U} , R-2955, the latter being located in unit 14 of the RFO (see figure 2-11). R-2955 is a potentiometer with a built-in "on-off" switch, S-2997. This voltage divider action is such that the signal taken from the movable arm of R-2955 and fed to the frequency-shift oscillator (paragraph 2f(3)) can be adjusted to produce from zero to one radian in phase shift of the output of the frequency-shift oscillator, varying around the fundamental carrier frequency at a rate of 200 cycles per second. In hand-key or machine-key operation, the 1,000-cycle output is coupled through limiting resistor R-1141, contacts 6 and 8 or 9 of SERVICE SELECTOR switch \textcircled{U} S-1101D rear to the grid of the sidetone amplifier, V-1004B, in the audio chain. In hand-key operation, a parallel connection, through contacts 8 and 6 of S-1101F rear, is made to keying relay K-1101 contact 1R. In space, K-1101 is not energized and 1,000-cycle output is grounded through contacts 2R and 1R of K-1101. In mark, K-1101 energizes and this ground is removed, allowing the signal to be applied to V-1004B. The resultant output is a 1,000-cycle signal that follows the mark keying signals. The sidetone amplifier, V-1004B, amplifies this signal and presents it to the sidetone jack, J-1104, and the remote radiophone unit for monitoring purposes.

In addition to controlling the components of the Wien bridge circuit, S-1101C rear, when in FSK or FAX position, supplies a ground to the RFO known as the "ground for FS" line (see paragraph 2g(1)).

d. LOCAL-REM. SWITCH \textcircled{X} S-1106.—To enable the transmitter to be controlled either locally at the location of the transmitter group or from a remote position, a LOCAL-REM. switch \textcircled{X} , S-1106, is provided. This switch is a seven-pole, two-position, one-section rotary wafer switch, which is shown in simplified form in figure 2-88. The action of the various poles of S-1106 is covered in the discussion of the associated circuits that they control (see paragraphs 4c, 7b(1) and 7c(1)). For the purposes of uniting the functions required to switch from local to remote operation, table 2-18 is provided.

Four sets of contacts are employed to connect the a-c line to the master control relay, K-3001, in the LVPS to insure sufficiently low contact resistance for positive action of K-3001.

e. +250-VOLT REGULATED POWER SUPPLY.—A power supply is contained in the LLRM whose output is a regulated +250 volts, which is used in the critical keying and audio circuits of the LLRM and the RFO. This power supply consists of rectifier V-1009, regulator V-1010, regulator control V-1011, and voltage regulator V-1012.

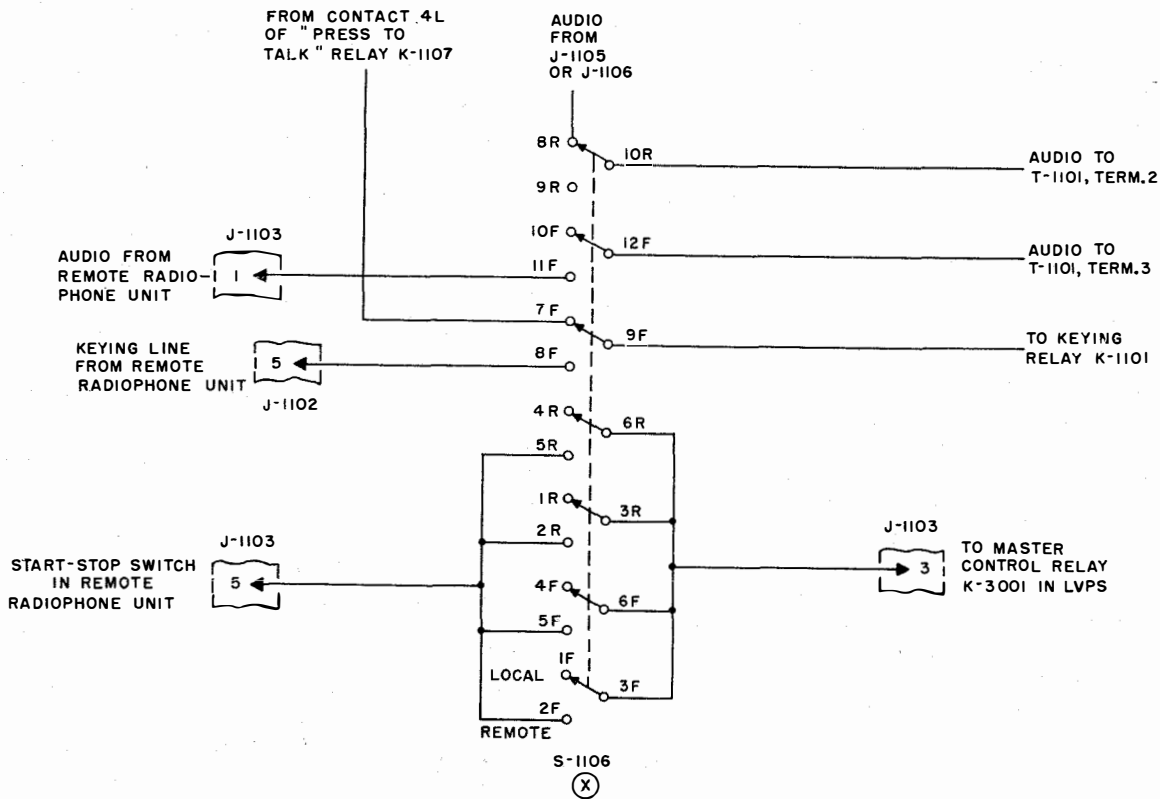


Figure 2-88. LOCAL-REM. Switch (X) S-1106, Simplified Schematic

TABLE 2-18. FUNCTIONS OF LOCAL-REM. SWITCH (X) S-1106

| POSITION | CONTACTS | FUNCTION |
|----------|-----------------------------------|---|
| REMOTE | 2F, 5F, 2R, 5R and 3F, 6F, 3R, 6R | Connect "start-stop" switch in remote radiophone unit to master control relay K-3001 in LVPS. |
| REMOTE | 8F and 9F | Connect keying line from remote radiophone unit to the keying relay K-1101. |
| REMOTE | 11F and 12F | Connect audio from remote radiophone unit to audio transformer T-1003. |
| LOCAL | 7F and 9F | Connect local press-to-talk line from HANDSET receptacle J-1106 or MIC. jack J-1105 to the keying relay K-1101. |
| LOCAL | 8R and 10R | Connect audio from phone receptacle J-1106 or phone jack J-1105 to audio transformer T-1003. |

(1) RECTIFIER V-1009.—Negative 110-volt, 60-cycle a-c power is applied to the +250-volt supply transformer T-1001 through fuse F-1001 (figure 2-89). This a-c power is supplied from the LVPS and is available after the MAIN POWER switch (R), S-3004, ON button has been depressed (see paragraph 4c). Rectifier

V-1009 is a conventional full-wave rectifier with plate voltage applied from terminals 3 and 5 of the secondary of T-1001. The supply has a ground return through the center-tap terminal 4 of T-1001. The output from V-1009 is filtered by L-1001 and C-1036. Resistors R-1055, R-1056, R-1057, and R-1058 are a bleeder network for C-1036.

(2) REGULATOR V-1010.—Regulator V-1010 is effectively a variable resistance in series with the power supply. When the output voltage of the power supply tends to rise above the +250 volts, apparent resistance of V-1010 increases, and when the output voltage tends to decrease below +250 volts, the resistance of V-1010 lowers. Thus the regulator opposes the changes in the output voltage owing to such causes as line voltage and current drain changes. The regulator control, V-1011, provides the controlling action of the apparent resistance of V-1010 as explained in the following paragraph. The regulator is a dual-triode (6AS7G) with the two sections operated in parallel to provide sufficient current capacity to meet the entire drain for the power supply. Resistors R-1059 and R-1060 are parasitic suppressors in the plate circuits of V-1010. Excessive cathode-to-filament potential on V-1010 is avoided by tying the center tap, terminal 4, of the secondary of filament transformer T-1002 serving V-1010 to the +250-volt output of the power supply. Similarly, the center tap of the secondary of T-1002, providing filament voltage to several other

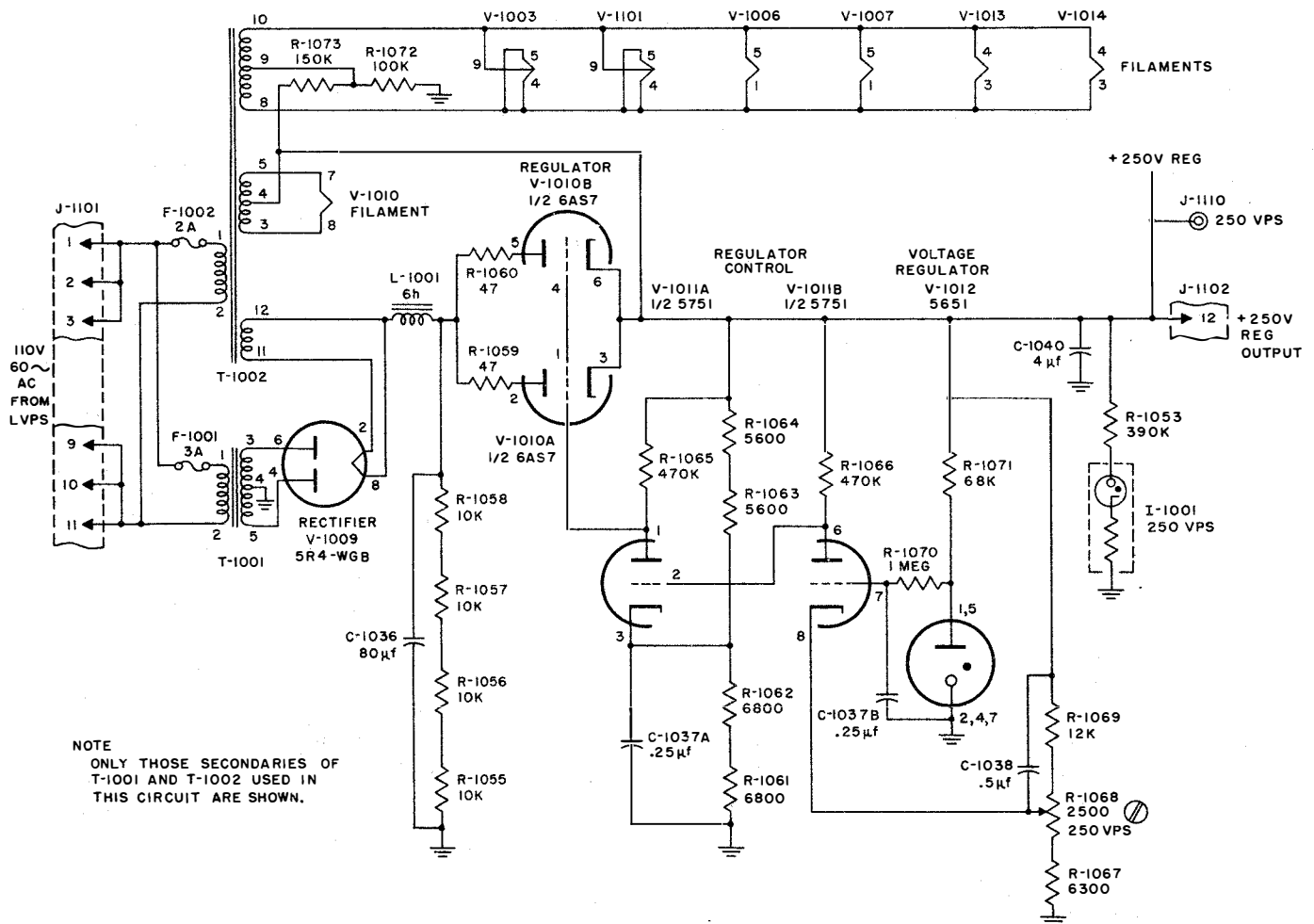


Figure 2-89. Rectifier V-1009, Regulator V-1010, Regulator Control V-1011 and Voltage Regulator V-1012, Simplified Schematic

tubes in the LLRM (V-1003, V-1006, V-1007, V-1011, V-1013, V-1014), is maintained at +100 volts, taken from the voltage divider comprised of R-1072 and R-1073 from +250 volts to ground.

(3) REGULATOR CONTROL V-1011 AND VOLTAGE REGULATOR V-1012.—When the power supply output tends to vary from +250 volts, regulator control V-1011 (figure 2-89) produces a signal that causes regulator V-1010 to oppose this change in voltage. The two triode sections of V-1011 are d-c amplifiers in cascade. The control grid of V-1011B, pin 7, is connected through R-1070 to a regulated +87 volts provided by the voltage divider, R-1071, and voltage regulator V-1012 from +250 volts to ground. The cathode of V-1011B is maintained at a positive potential by means of potentiometer R-1068, which is part of the voltage divider R-1069, R-1068 and R-1067 from +250 volts to ground. A change in power supply output voltage results in a change in the voltage divider and consequently a change in the cathode voltage of V-1011B. As the grid voltage of V-1011B is held constant by the action of V-1012, a change in cathode po-

tential will cause a change in plate current and plate voltage of V-1011B. As the plate of V-1011B is directly connected to the grid of V-1011A, there will be the same change on the grid of V-1011A. The V-1011A cathode is tied to a positive potential by the voltage divider comprised of R-1064, R-1063, R-1062, and R-1061 from +250 volts to ground. Rapid changes of voltage appearing at the cathode of V-1011A are bypassed by C-1037A. Therefore, a change in grid potential of V-1011A causes a change in plate current and plate voltage and, therefore, the same change of grid voltage of both halves of the regulator V-1010 in such a direction that the output voltage of the power supply is restored to +250 volts.

For example, if the power supply output should tend to rise above +250 volts, the cathode potential of V-1011B rises, causing the plate current to fall, thus increasing the plate voltage of V-1011B. This increases grid voltage of V-1011A. The cathode of V-1011A does not follow the rapid change of voltage caused by the bypass capacitor, C-1037A. The increased grid voltage of V-1011A causes an increase in plate current and

a decrease in plate voltage, and, consequently, a decrease in grid voltage of V-1010. As a result, the plate current of V-1010 is reduced, which can be considered as an increase in the apparent resistance of the tube, and the output voltage is reduced to the +250-volt value. If the output voltage tends to drop below +250 volts, a similar action takes place in reverse, decreasing the apparent resistance of V-1010 and restoring the output to +250 volts. The steady state apparent resistance of V-1010 determines the exact value of the output voltage of the supply. Potentiometer R-1068, known as the 250 V.P.S. control, can be adjusted to regulate the steady state value of the cathode potential of V-1011B, which sets the apparent resistance of V-1010 through the regulator control, V-1011, and, consequently, also regulates the exact output voltage. The ripple component, remaining after the filtering action, is bypassed by C-1038 directly to the cathode of V-1011B where the regulation described above takes place to further reduce the ripple content. C-1040 is a final filter capacitor. R-1053 is a dropping resistor for 250 V.P.S. indicator I-1001. J-1110 is a test point for measuring this supply.

f. -12-VOLT POWER SUPPLY.—The -12-volt power supply (figure 2-90) uses a metallic bridge rectifier, CR-1001, connected to give a negative voltage output. Rectifier CR-1001 receives 16.5 volts rms from terminals 15 and 16 of T-1002. The output is filtered by L-1005, C-1034, and C-1035 with R-1054 acting as a bleeder. The -12 volts is supplied to the DYNAMIC-CARBON switch (Y), S-1102 in the LLRM, for use as operating voltage for the carbon microphone. The output is also fed to the remote radiophone unit where it is the operating voltage for the carbon microphone and the CARRIER ON indicator and control relay in addition.

g. ATU BYPASS TRANSFER CIRCUIT.—The antenna tuning system is arranged to be bypassed during times when there is no transmitter carrier so that the antenna can be directly connected to a receiver that can be tuned to a different frequency from that of the transmitter. Indications of the presence of a carrier are taken from the keying line, with the exception that it is undesirable to have the bypass function attempt to follow the hand-keying signals. The function of the

ATU bypass transfer circuit is to provide a signal that will cut the antenna tuning system in at the time of the first mark signal of a transmission and keep the antenna tuning system in until after the last mark of a transmission has been transmitted. The following describes the circuit design that accomplishes this.

For purposes of convenience of mounting location, the circuit components of the ATU bypass transfer circuit are mounted on the preamplifier subchassis (see figure 2-91). Relay K-1102, when energized, completes a signal path, through its contacts 3 and 4, to the antenna tuning system, which keeps the antenna tuning equipment in the line. Conversely, when K-1101 is not energized, this control circuit is opened and the antenna tuning system is bypassed. In a "key up" condition the keying line is at -24 volts, while in "key down" the keying line is at ground potential. The grid of the transfer control tube, pin 7 of V-1023B, and cathode of the limiter, pin 3 of V-1023A, are tied to -10 volts through resistors R-1130 and R-1134. The -10 volts is obtained from the voltage divider comprised of R-1121, R-1028, R-1133, and R-1132. The voltage divider is connected from the -105-volt source to ground, and the -10 volts is taken from the junction of R-1133 and R-1132.

Consider the condition of having the transmitter in the hand-key mode of operation with the key "up" just prior to the start of transmission. In "key up" the limiter, V-1023A, does not conduct, as its plate is at -24 volts while its cathode is at -10 volts. The -10 volts also appears at the grid of the transfer control tube, V-1023B, which is sufficient to cut the tube off. Therefore, K-1102, which is the plate load of V-1023B, is not energized, the transfer control circuit is opened, and the antenna tuning system is in the bypass condition. Also during this so-called steady state condition, the capacitor, C-1039, with one side connected to the plate of V-1023B and the other side connected to the grid of V-1023B, is charged to 260 volts (from +250 volts to -10 volts).

Now, consider the first mark signal of a hand-key transmission. The keying line is now at zero potential with the result that the limiter, V-1023A, now conducts heavily, so that the grid of V-1023B is tied, effectively, to zero potential. This then causes V-1023B

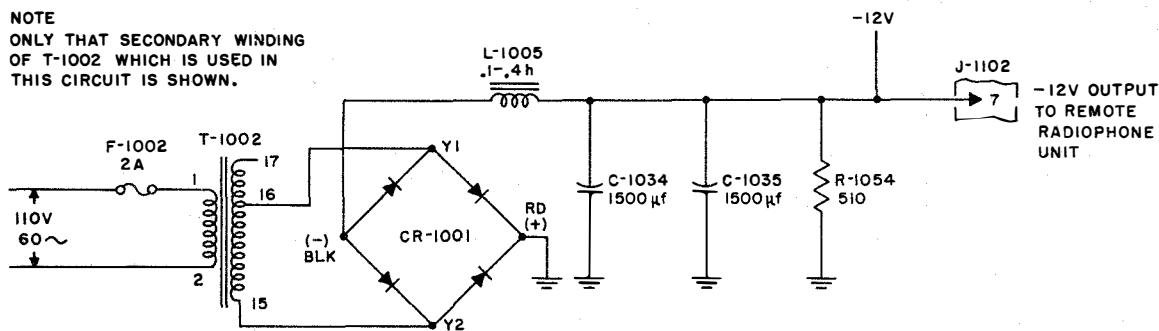


Figure 2-90. -12-Volt Power Supply, Simplified Schematic

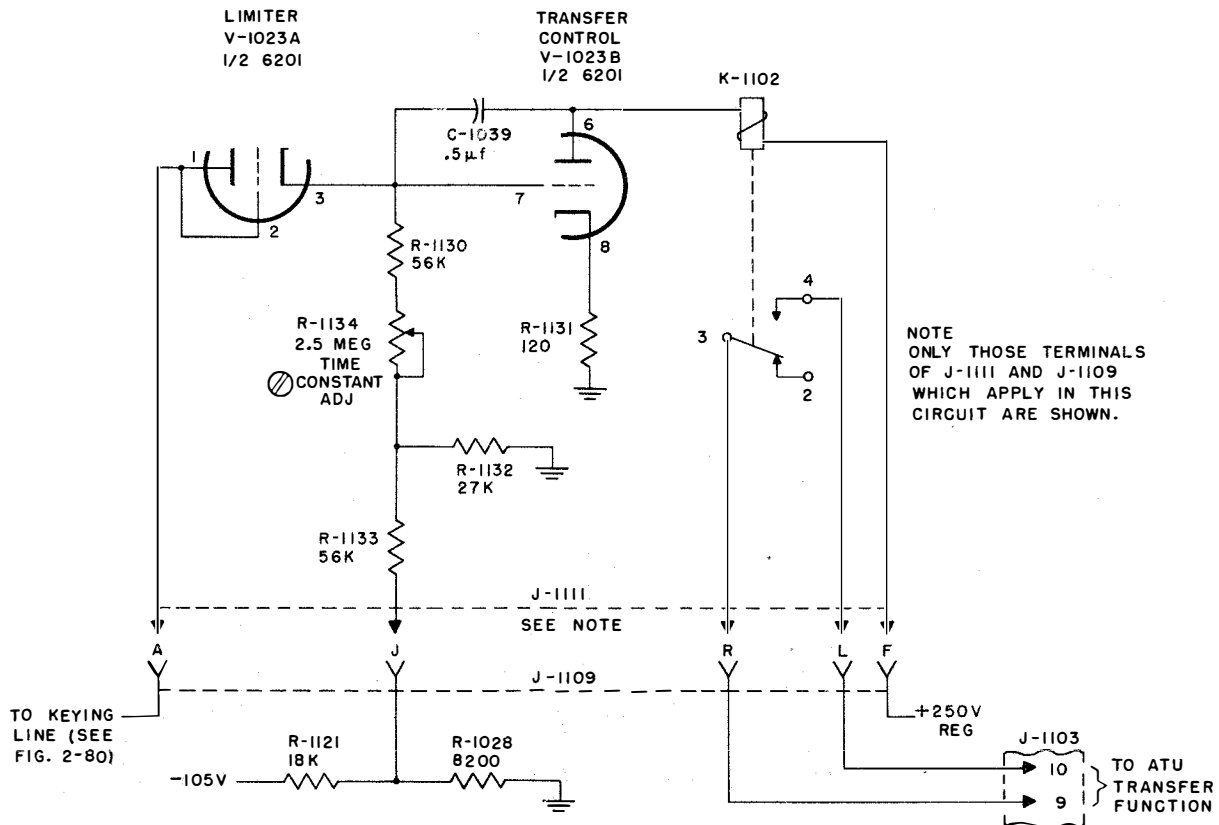


Figure 2-91. ATU Bypass Transfer Circuit, Simplified Schematic

to conduct heavily, and K-1102 operates, closing the transfer control circuit to the antenna tuning equipment, which, in turn, removes the bypass from the antenna tuning equipment. Owing to the conduction of V-1023A and B, capacitor C-1039 discharges to about 200 volts (+200 volts at plate of V-1023B and zero volts at the grid of V-1023B).

At the instant of the change from mark to space, the keying line returns to -24 volts and the limiter V-1023A stops conducting. Capacitor C-1039 starts to recharge, and the grid of V-1023B begins to return, exponentially, to -10 volts. As the grid of V-1023B starts to go negative, there is a corresponding reduction in plate current of V-1023B and increase of plate voltage. The plate relay, K-1102, will remain energized until the current through it reduces below 0.5 milliamperes. The time constant of the charge of C-1039 and, consequently, the rate at which the grid of V-1023B returns to final space value of -10 volts are determined by the value of K-1102 winding resistance, C-1039, R-1130, R-1134 and the plate current characteristic of V-1023B. This time constant can be regulated by the variable resistor, R-1134, TIME CONST. ADJ., so that it takes anywhere from 0.5 second to 6 seconds after the completion of a mark signal before K-1102 de-energizes. The value that is set in this range depends on the operator and is set so that K-1102 remains up during periods between characters or words of a transmission.

In phone operation, the depressing of the press-to-talk button produces the same effect on the keying line as the depressing of a hand key and therefore the ATU bypass transfer circuit functions in the same manner as in hand key with the modification that the time constant, as determined by R-1134, be set at the minimum value to prevent the possible loss of the first part of an answering signal. In machine-key, FSK, and facsimile transmission, a permanent ground is supplied to the keying line, which means that K-1102 is permanently energized, and the antenna tuning system remains in at all times when these three modes of transmission are used.

8. RADIOPHONE UNIT.

The radiophone unit, usually located in a remote position, may be used in conjunction with, but is not part of, Radio Transmitting Sets AN/SRT-14, 15 or 16. This unit contains a start-stop switch for turning the transmitter on or off, jacks for connecting a handset, chestset, or hand key, a volume control for the earphones, and visual indicators for power and carrier.

9. RADIO MODULATOR MD-230/SRT (HIGH LEVEL RADIO MODULATOR, HLRM).

a. GENERAL.—During phone operation at the 500-watt level, an audio signal of 250 watts is required to amplitude-modulate the plate voltage of the RFA power amplifier. This is done by feeding the audio

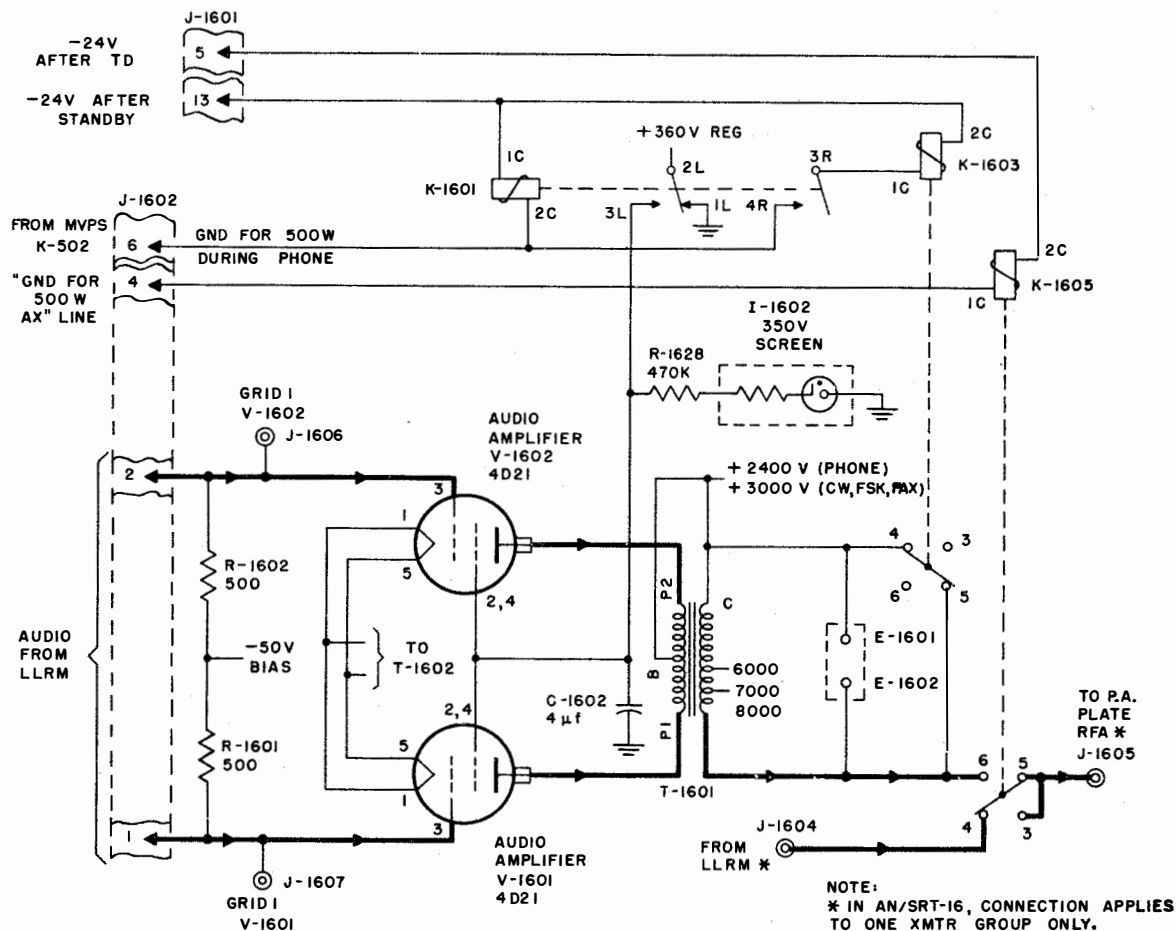


Figure 2-92. Audio Amplifiers V-1601 and V-1602, Simplified Schematic

signal from the LLRM, at a 6-watt level, to the HLRM and amplifying it to 250 watts. During hand-key, machine-key, FSK, and FAX operation, the plate voltage for the RFA power amplifier is routed directly through the HLRM. In the AN/SRT-16, the output of the HLRM is fed to the RFA in one transmitter group only, which signifies that only one transmitter group may operate at the 500-watt level. The AN/SRT-15 has only one transmitter group that employs the HLRM in 500-watt phone operation. As the AN/SRT-14 transmits only at the 100-watt level, no HLRM is employed.

b. AUDIO AMPLIFIERS V-1601 AND V-1602.— During 500-watt phone operation, the audio modulating signal from the LLRM, at the 6-watt level (see paragraph 7b(7)(c)), is fed to control grids of the push-pull amplifiers, V-1601 and V-1602 (figure 2-92) in the HLRM, equally but out of phase so that the push-pull action is amplified in the output modulation transformer, T-1601. Plate supply for the amplifier (+2,400 V during phone) is delivered to the center tap of the primary of T-1601. "Ground for 500 W during phone" is supplied from the MVPS (see paragraph 5d) to relay K-1601 and, if "-24 V after standby" is present, K-1601 energizes, supplying +360-volt screen supply through its contacts, 2L and 3L, to the screen grids

of V-1601 and V-1602. Capacitor C-1602 is a bypass for the screen supply and resistor R-1628 is a dropping resistor for the +350 V SCREEN indicator, I-1602, which indicates that the HLRM screen supply is present. In phone operation, the "-24 V after standby" line is energized by the press-to-talk button of the phone which means that press to talk controls the applying of screen voltage to the HLRM. Whenever screen voltage is not applied to V-1601 and V-1602, these tubes cannot conduct, and there is no modulation signal output from the HLRM.

The output of the HLRM in 500-watt operation is used as the plate supply for the power amplifier in the RFA. In phone operation, the supply is +2,400 volts from the HVPS, which is first supplied to one side of the secondary of the output modulation transformer (terminal C of T-1601), so that the 250-watt audio modulating signal is imposed on the power amplifiers' plate supply. Protection against excessively high voltages across the secondary of T-1601 is provided by spark gaps E-1601 and E-1602. In other than phone operation, the HLRM output is +3,000 volts from the HVPS applied directly to the power amplifier plates, as modulation transformer secondary T-1601 is shorted. The shorting and unshorting of the secondary of T-1601

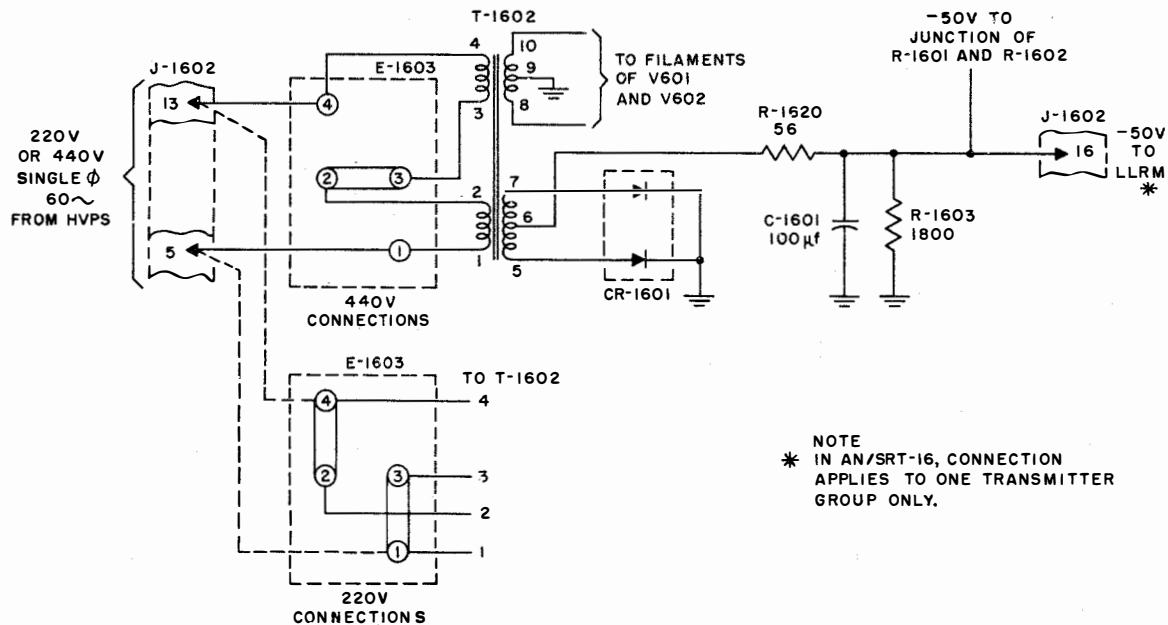


Figure 2-93. -50-Volt Bias Supply, Simplified Schematic

is controlled by relay K-1603. Shorting takes place through contacts 4 and 5 of K-1603 when K-1603 is not energized. As K-1603 is energized through contacts 3R and 4R of energized relay K-1601, it operates under the same conditions as K-1601, namely when the press-to-talk button is depressed in 500-watt phone operation. This removes the short and places the secondary of T-1601 in series with the high voltage supplied from the HVPS.

In the AN/SRT-15, the input to the plate of the power amplifier in the RFA comes from the output of the HLRM under control of the switching relay, K-1605. If the transmitter group is in 100-watt operation, the "ground for 500 W" AX line is open circuit, and K-1605 is not energized. This connects the output of the LLRM (see paragraph 7b(7)(c)), which enters through receptacle J-1604, through contacts 4 and 5 of K-1605 and receptacle J-1605 to the power amplifier plate. In 500-watt operation the "ground for 500 W" AX line is prepared, and K-1605 is energized after time delay. The output of the HLRM is now connected to the power amplifier plate through contacts 3 and 6 of energized K-1605 and receptacle J-1605. In the AN/SRT-16, the above applies to one transmitter group only. In the other transmitter group, the plate supply of the power amplifier is received from the LLRM directly. As the output of the HLRM is a permanent interconnection, the transmitter group to which it is fed, in the AN/SRT-16, will be the group that can be placed in 500-watt operation.

c. -50-VOLT BIAS SUPPLY.—To operate the audio amplifiers at the desired class AB₂ operation, a -50-volt bias supply is required. This supply (figure 2-93) is obtained from terminals 5 and 7 of T-1602, using metallic rectifier CR-1601 connected as a negative full-

wave rectifier, with the rectified voltage taken from the center-tap terminal 6 of T-1602 through the single section R-C filter comprised of R-1620 and C-1601. Resistor R-1603 is a bleeder for the filter capacitor. The -50 volts is applied to the center tap of the 6-watt secondary of the driver output transformer of the LLRM, which constitutes the signal input to the HLRM audio amplifier control grids. The -50 volts is also applied to the junction of the amplifier grid resistors, R-1601 and R-1602. These grid resistors act to limit grid current drawn in class AB₂ operation to reduce signal distortion. Transformer T-1602, through another secondary (terminals 8 and 10), also supplies filament voltages for V-1601 and V-1602. T-1602 has two primary windings that are either connected in series for 440-volt, single-phase, 60-cycle input or in parallel for 220-volt input by means of links on E-1603.

d. REGULATED +360-VOLT D-C SUPPLY.— A regulated +360-volt d-c supply (figure 2-94) is obtained for HLRM screen supply from the voltage-divider action of resistors R-1629, R-1630, and voltage regulator tubes V-1603, V-1604, V-1605, all in series from the +2,400-volt supply to ground whenever relay K-1601 is energized. During 500-watt phone operation, K-1601 is energized so that at the junction of resistor R-1630 and voltage regulator tube V-1603, through the contacts 2L and 3L of K-1601, a regulated +360 volts is obtained from the series action of V-1604 and V-1605, which are 105-volt regulators, and V-1603, which is a 150-volt regulator. Resistors R-1631, R-1632, R-1633 act as a voltage divider in parallel with the regulators when relay K-1601 is first operated, protecting the tubes until they fire and take control. When K-1601 is not energized, the junction of resistor R-1630 and regulator tube V-1603 is grounded through con-

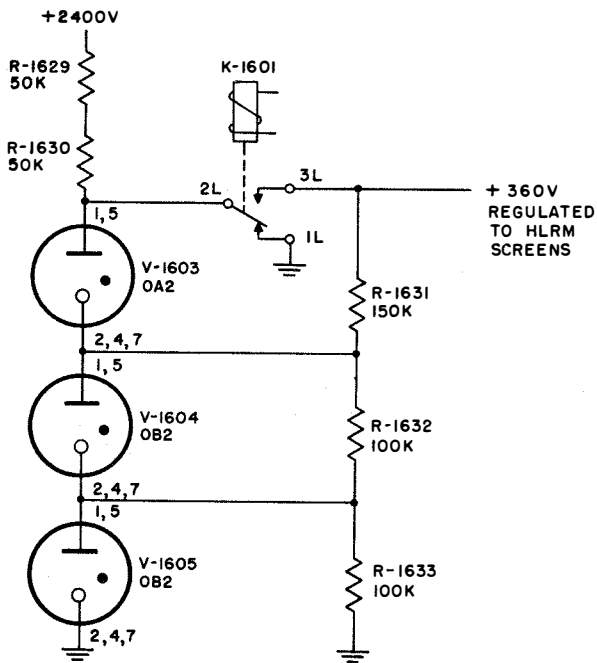


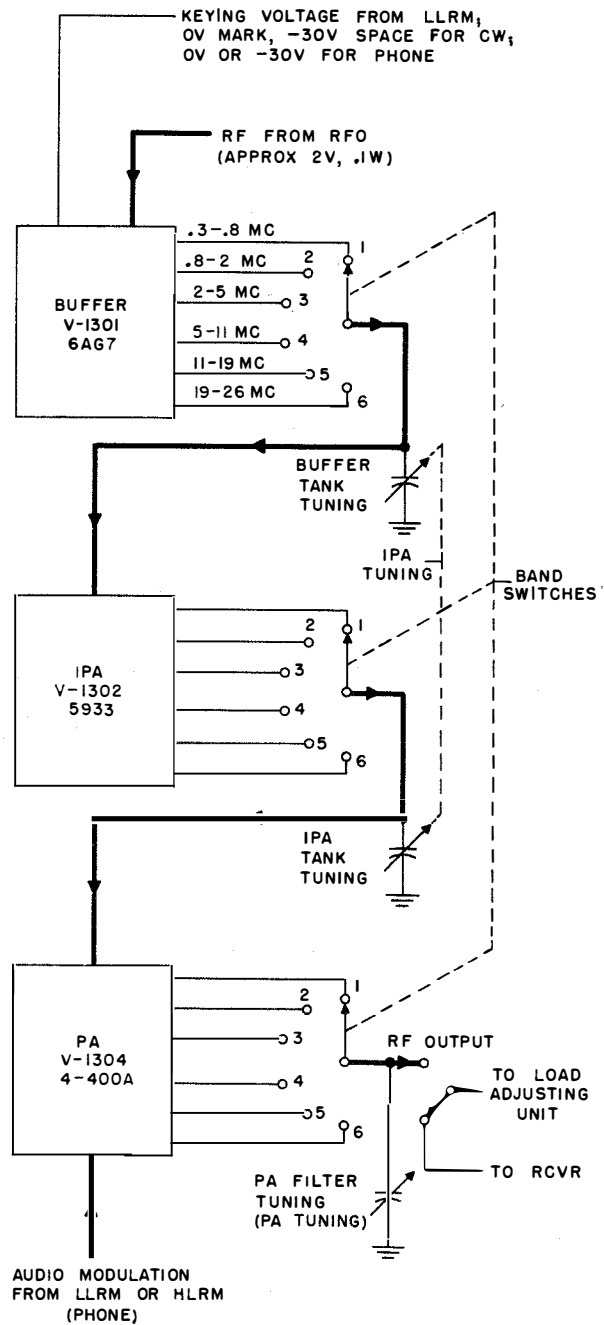
Figure 2-94. Regulated +360-Volt D-C Supply, Simplified Schematic

tacts 1L and 2L of K-1601, which effectively turns off the regulated +360-volt supply. Resistors R-1629, R-1630 now act as bleeder resistors for the +3,000-volt supply filter.

10. RADIO FREQUENCY AMPLIFIER AM-1008/SRT (RADIO FREQUENCY AMPLIFIER, RFA).

a. GENERAL.—The radio frequency amplifier (RFA) accepts from the RFO a signal at a frequency within the range of 0.3 to 26 mc. The RFA amplifies this signal from a level of approximately 0.1 watt (two volts rms) to a nominal level of either 100 watts or 500 watts. After harmonics have been attenuated by a suitable filter, the RFA output is transmitted by coaxial cable to the load adjusting unit. The RFA output may be either modulated by audio from the LLRM or HLRM, or keyed on and off by keying voltages from the LLRM. During FSK and facsimile operation the r-f signal from the RFO is frequency-modulated in the RFO.

Tuning of the RFA is accomplished manually by means of three controls: the BANDSWITCH (C), TUNE IPA control (B), and the TUNE PA control (D). To enable the RFA to tune through the entire range of 0.3 to 26 mc, the range of frequencies is grouped into six bands. The r-f output of the RFO is amplified by three stages: the buffer, intermediate power amplifier (IPA), and power amplifier (PA). The function of the BANDSWITCH (C) is to connect a tank circuit to each of these amplifiers in accordance with the band that contains the frequency chosen for transmission.



NOTE
CONTROL CIRCUITS AND
METERING CIRCUITS
HAVE BEEN OMITTED
FOR CLARITY.

Figure 2-95. Radio Frequency Amplifier AM-1008/SRT (Radio Frequency Amplifier, RFA), Block Diagram

After the desired band is set by the bandswitch, the tuning of the buffer and IPA tank circuits is peaked by the TUNE IPA control (B). The tuning of the PA tank circuit is then peaked by the TUNE PA control (D). The buffer, in addition to amplifying the r-f signal, isolates the RFA from the RFO and turns the RFA off

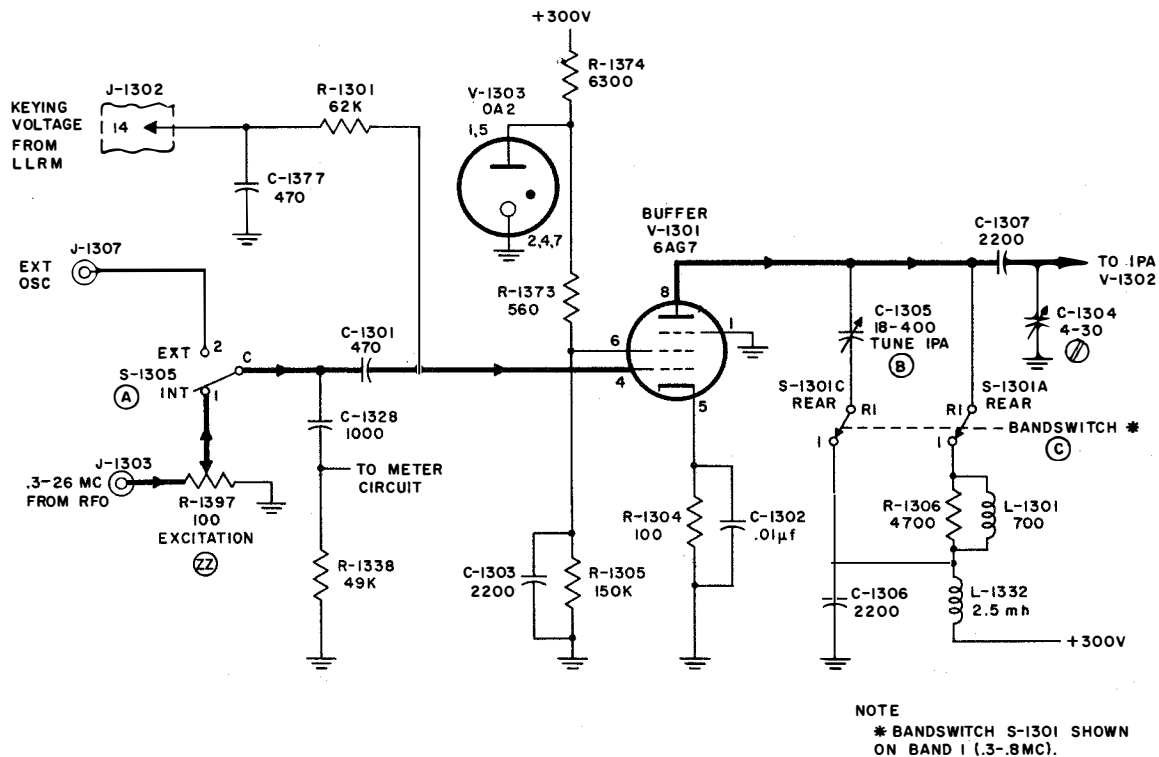


Figure 2-96. Buffer V-1301, Simplified Schematic

and on in accordance with the keying voltages from the LLRM. Figure 2-95 is a block diagram of the RFA with the metering and control circuits left out for clarity. Control circuits are shown in detail in figures 2-103 and 2-104 with the metering circuit shown in figure 2-108.

b. BUFFER V-1301.—Buffer V-1301 (figure 2-96) is a class A amplifier that amplifies the r-f output of the RFO and isolates the RFO from possible variations in buffer load impedance resulting from on-off keying of the buffer. During c-w and phone operations, the buffer and hence the carrier are keyed on and off by keying voltages from the LLRM. The buffer is keyed off during space in cw, and is keyed on during mark in cw or when the microphone press-to-talk button is depressed in phone operation. The buffer is always on in FSK and facsimile operations.

(1) BUFFER INPUT.—The output of the RFO is terminated by the EXCITATION control Ⓣ R-1397, which is a 100-ohm potentiometer to match the impedance of the coaxial cable carrying the r-f signal from the RFO to the RFA so that a uniform signal strength is presented to the RFA regardless of the length of this line. The amplitude of r-f signal coupled to the grid of the buffer, V-1301, through capacitor C-1301 and through the INT-OSC-EXT switch ⓐ, S-1305, in the INT. position, is determined by the setting of the Ⓣ control, which should be such that the value is neither in excess of five volts rms nor is such that when all tuning is completed, the value of PA screen grid current does not exceed 70 ma (see paragraph 10d).

An external signal may be fed to the RFA through receptacle J-1308 and coupled to the grid of the buffer through switch ⓐ S-1305 in the EXT position. The r-f input is also coupled to the meter circuit through capacitor C-1328.

(2) BUFFER TANK CIRCUIT.—The buffer amplifies the r-f signal and tunes it in the plate tank circuit (figures 2-96 and 2-97). The components of the tank are determined by the bandswitch setting. The switches, S-1301A rear, S-1301A front, and S-1301C rear, select the buffer tank components. These switches are ganged together and are manually controlled by the BANDSWITCH control ⓐ. Figures 2-96 and 2-97 show the setting for band 1. The frequency range of each band is given in paragraph 10f.

Bandswitch S-1301A rear selects the desired tuning inductor and, on bands 1 through 5, the required damping resistor. The damping resistor broadens the band response of the tank circuit required to maintain even excitation in phase-shift operation. Band 1 uses damping resistor R-1306 and inductor L-1301; band 2, R-1392 and L-1334; band 3, R-1310 and L-1305; band 4, R-1309 and L-1304; band 5, R-1308 and L-1303; band 6, L-1302. Bandswitch S-1301A front shorts out all unused inductors and damping resistors. Bandswitch S-1301C rear connects tuning capacitor C-1305 in parallel with the selected tuning inductor and, in bands 5 and 6, it selects band-spread capacitor C-1369 or C-1370, respectively. These capacitors spread the tuning of bands 5 and 6 over almost the full 180° rotation of tuning capacitor C-1305. After the desired tank

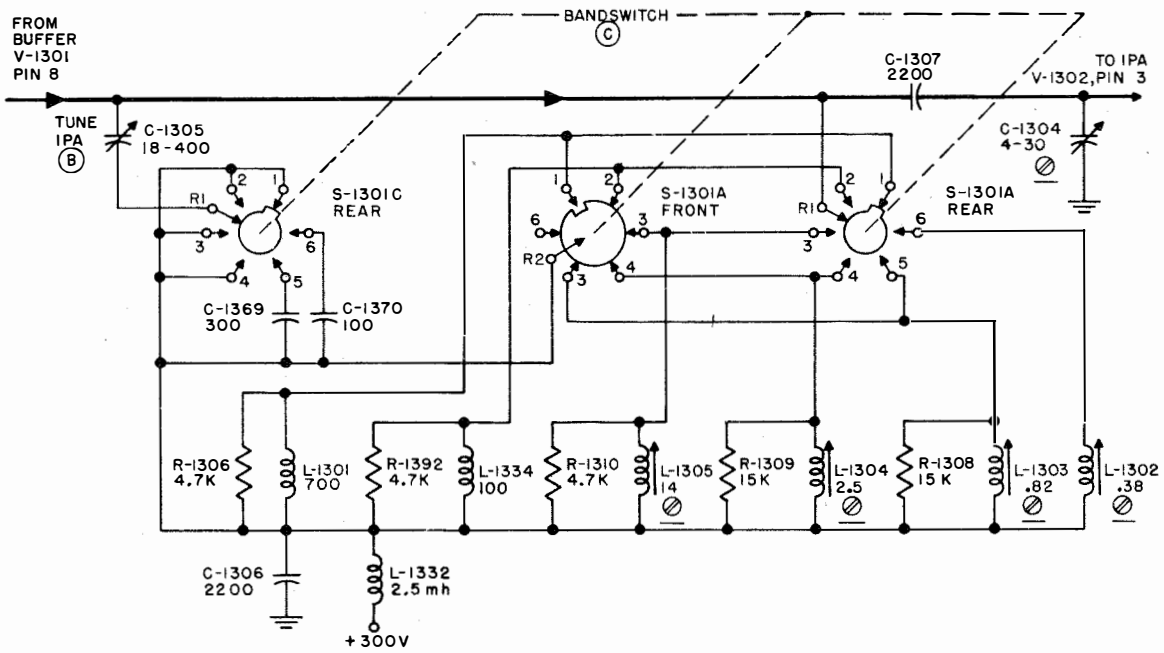


Figure 2-97. Buffer Tank Circuit, Simplified Schematic

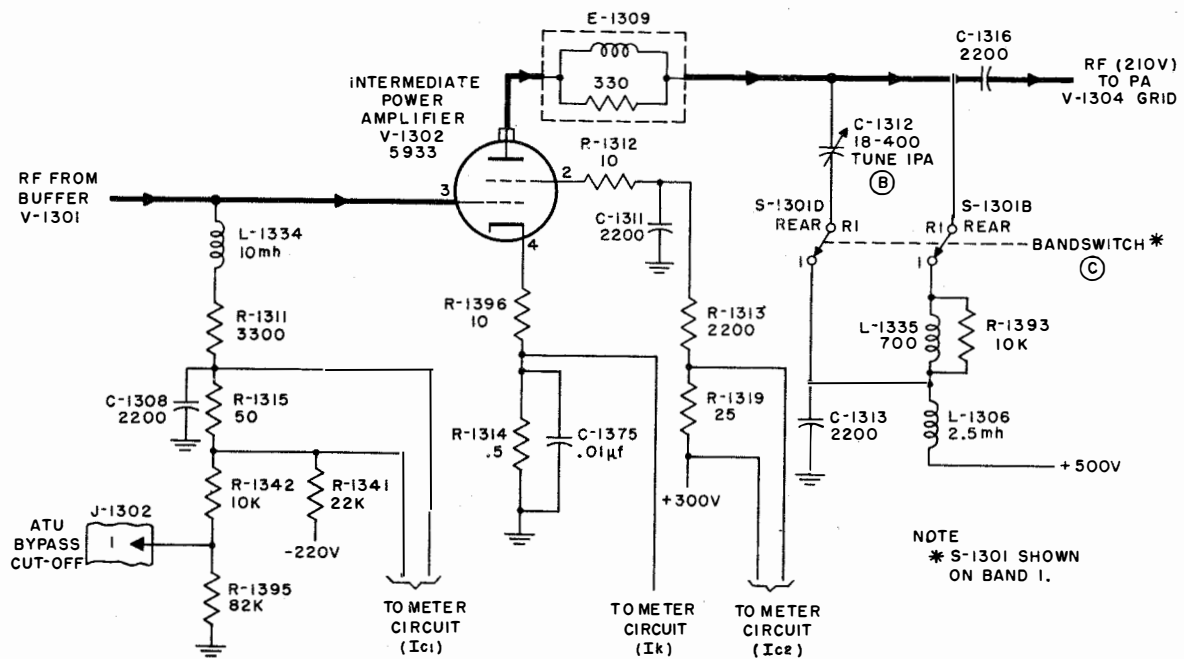


Figure 2-98. IPA V-1302, Simplified Schematic

circuit has been selected, the band circuit is tuned to maximum output by tuning capacitor C-1305, which is manually controlled by the TUNE IPA control (Ⓟ). The tank circuit is decoupled from the 300-volt B+ supply by bypass capacitor C-1306 and filter choke L-1332. Capacitor C-1307 couples the output of the buffer stage to the grid of the IPA tube, V-1302. Trimmer capacitor C-1304 is connected on the IPA grid side of coupling capacitor C-1307 to reduce the d-c potential between its plates.

(3) BUFFER KEYING.—During FSK or FAX operation, the buffer control grid (figure 2-96) is maintained at a constant potential of zero volts and its screen grid at a constant potential of approximately +150 volts, thereby keeping the buffer amplifying and the carrier continuously on the air. The zero voltage on the control grid is directly applied from the LLRM, through isolating resistor R-1301, with capacitor C-1377 acting as an r-f bypass. The screen potential is supplied from the regulated +150 volts supplied by the action of the voltage regulator tube, V-1303, in series with resistor R-1403, forming a voltage divider across the +300-volt supply. Resistor R-1305 and capacitor C-1303 form an r-f filter to further stabilize the buffer screen supply, and resistor R-1402 acts as a suppressor. In c-w operation during mark and in phone operation when the press-to-talk button is depressed, the above conditions also prevail and the buffer amplifies. However, in c-w operation during space and in phone operation when the press-to-talk button is not depressed, -30 volts is received from the LLRM through isolating resistor R-1301 and is applied to the control grid of the buffer. This -30 volts is sufficient to drive the buffer well below cutoff so that any r-f signal from the RFO will not be amplified, which effectively cuts the carrier off the air. The origin of the zero and -30-volt keying voltage is explained in the keying circuit discussion in the LLRM (paragraph 7c(7)).

c. IPA V-1302.—The intermediate power amplifier (IPA) V-1302 (figure 2-98) amplifies the r-f signal from the buffer V-1301 to a level of approximately 210 volts rms. The r-f signal is further tuned in the IPA plate tank circuit.

(1) IPA INPUT.—During normal operation, the control grid of the IPA is power biased to approximately -65 volts by means of the voltage divider R-1341 and R-1342 connected between the -220-volt supply and a ground that is supplied from the antenna tuning unit. A grid leak circuit is comprised of r-f choke L-1344, R-1311, together with grid current meter shunting resistor R-1315. Thus, a combination of grid-leak bias and fixed bias is used. Capacitor C-1308 bypasses the meter and power bias circuit. The cathode is grounded through parasitic suppressor R-1396 and cathode current meter-shunting resistor R-1314, which is bypassed by C-1375. The screen is connected to the +300-volt supply through parasitic suppressor R-1312, filter resistor R-1313, and screen current meter-shunting resistor R-1319. E-1309,

in the plate circuit, is a parasitic suppressor formed by a coil wound on a 330-ohm resistor. When switching takes place, to bypass the antenna tuning unit, the r-f line to the antenna is momentarily opened. At the same time the ground from the ATU supplied to the IPA grid bias voltage divider is removed and, momentarily, R-1395 is added to the voltage divider, raising the bias on the grid to -180 volts, cutting off the IPA and, consequently, the RFA output, to prevent any surge in the r-f output caused by the momentary loss of antenna load.

(2) IPA TANK CIRCUIT.—The IPA tank circuit (figures 2-98 and 2-99, shown for band 1) is similar to the tank circuit of buffer V-1301. Both are tuned by the TUNE IPA control (Ⓟ), which is ganged to the IPA tuning capacitor, C-1312, as well as to the buffer tuning capacitor, C-1305. Choke L-1306 and capacitor C-1313 comprise a B+ decoupling network, for the +500-volt plate supply. BANDSWITCH control (Ⓢ) is ganged to IPA bandswitches S-1301D rear, S-1301B front, and S-1301B rear, as well as to the buffer bandswitches. The desired tuning inductor and associated damping resistor are selected by S-1301B rear. All other tuning inductors and damping resistors are shorted out by S-1301B front. On bands 5 and 6, bandswitch S-1301D rear selects a band-spread capacitor, C-1371 and C-1372, respectively, in series with tuning capacitor C-1312. The r-f output of the IPA, approximately 210 volts rms, is coupled by capacitor C-1316 to the control grid of the power amplifier (PA) V-1304.

d. PA V-1304.—Power amplifier V-1304 (figure 2-100) amplifies the r-f output of the IPA, V-1302, to a power level of 100 watts or 500 watts depending on the plate and screen voltages selected by means of the control circuits. The signal is again tuned in the PA plate circuit and is matched to the antenna line.

(1) PA INPUT.—In addition to higher plate and screen voltages required for 500-watt operation as compared to 100-watt operation, a higher grid bias is needed to keep "key-up" radiation below 400 micromicrowatts. The two grid biases are obtained from two taps on a voltage-divider network from the -200-volt supply. In 100-watt operation grid bias is obtained from a tap on potentiometer R-1345, which is part of a voltage-divider network from the -220-volt supply comprised of potentiometer R-1348, resistor R-1404, potentiometer R-1345, and resistor R-1405 to ground. From the tap on R-1345, bias is supplied through contacts 5R and 6R of relay K-1304, which is not energized in 100-watt operation, through grid current meter-shunting resistor R-1326, grid return resistor R-1344 and r-f choke L-1311 to the control grid of PA V-1304. In 500-watt operation, relay K-1304 is energized and grid bias is taken from a more negative point on the voltage divider, the tap on potentiometer R-1348, through contacts 10L and 9L of energized K-1304 to the grid circuit. Potentiometers R-1345 and R-1348 are normally adjusted for -110 volts and -155 volts respectively.

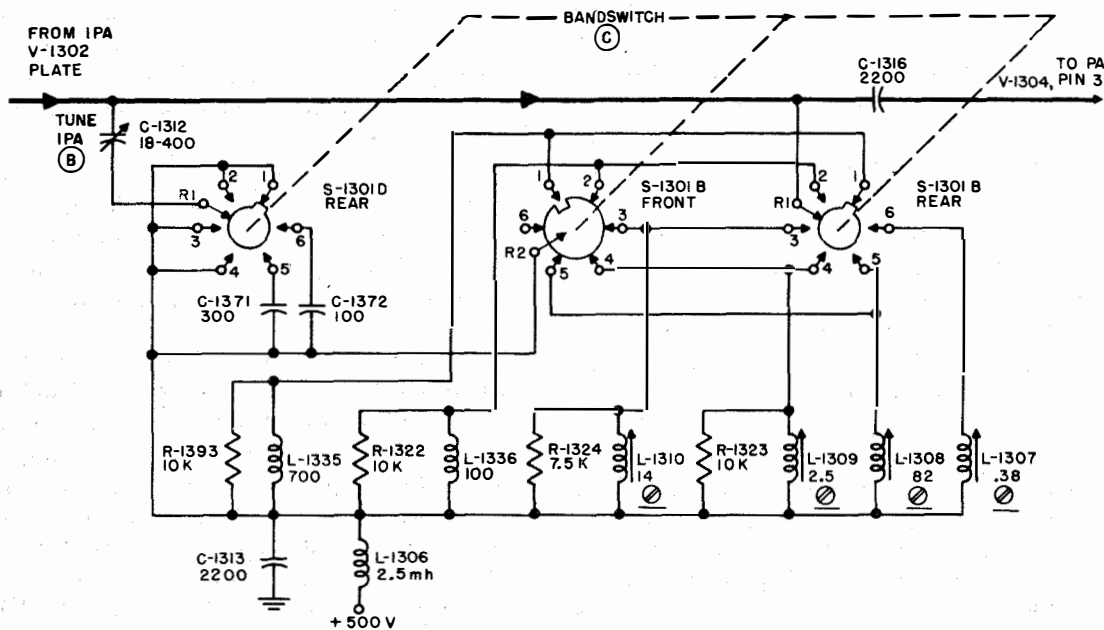


Figure 2-99. IPA Tank Circuit, Simplified Schematic

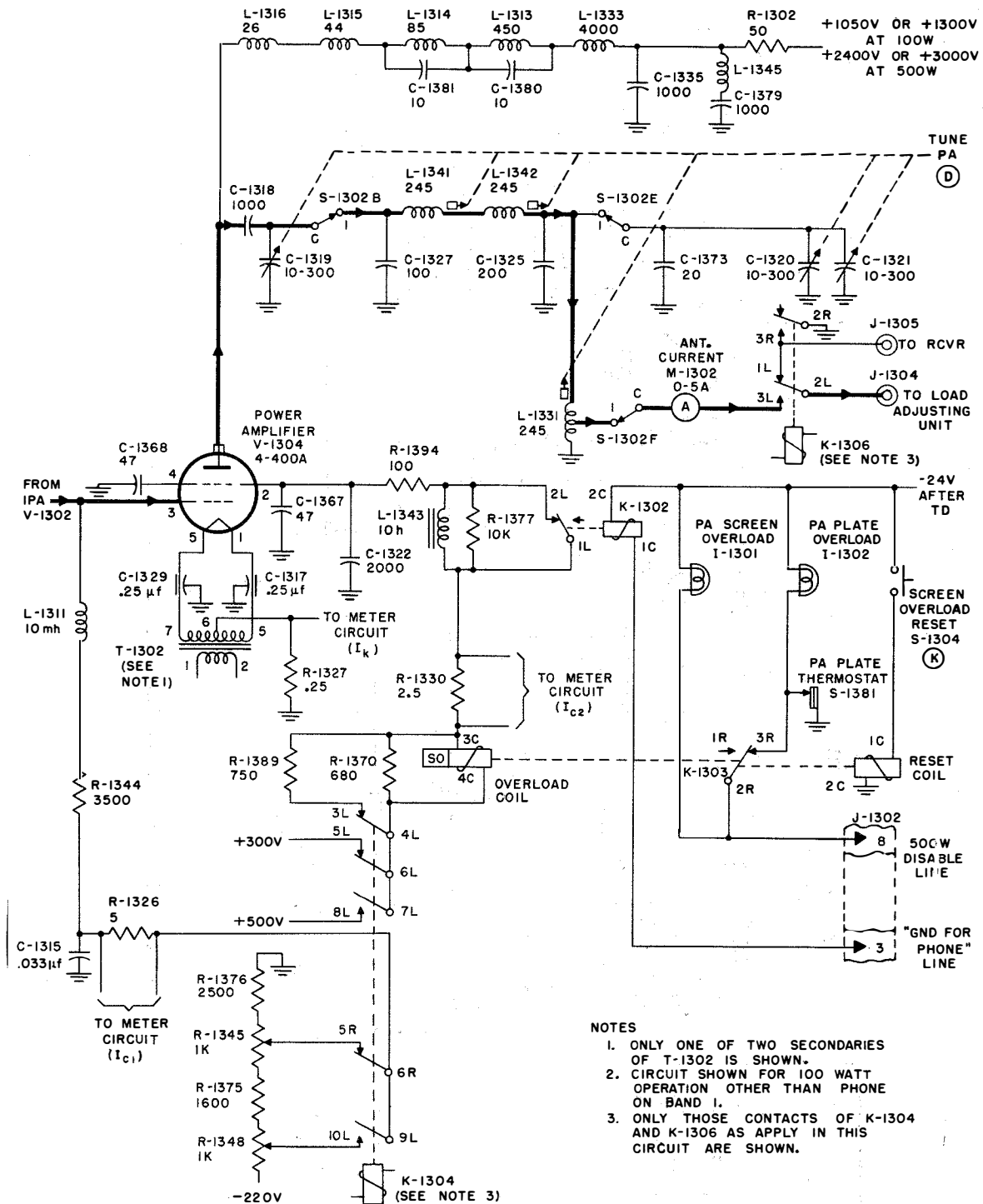
Filament power for the PA V-1304 is supplied from a secondary winding (terminals 5 and 7) of transformer T-1302. Center tap of this secondary (terminal 6) is grounded through cathode meter current shunting resistor R-1327. Capacitors C-1317 and C-1329 are feed-through bypasses for the cathode. Another secondary of T-1302 (terminals 3 and 4, not shown in figure 2-100) supplies filament power for the buffer, V-1301, and IPA V-1302.

(2) PA SCREEN CIRCUIT.—In 100-watt operation the +300-volt supply is the PA screen supply, while in 500-watt operation, the +500-volt supply is the screen supply. The switching is done by relay K-1304, which is energized in 500-watt operation but not in 100-watt operation. The +300-volt supply is connected as screen supply in 100-watt operation through contacts 5L and 6L of unenergized K-1304, thence through the overload coil of K-1303 and its shunting resistors R-1389 and R-1370, through the screen grid current meter-shunting resistor R-1330, then through screen modulation network L-1343 and R-1406, through the r-f filter network of R-1394, C-1322 and high frequency parasitic suppressing capacitor C-1367, to the screen grid of the PA V-1304. The +500-volt supply is applied to the screen grid circuit in 500-watt operation through contacts 8L and 7L of the now energized K-1304.

If screen grid current, which also flows through the overload coil of overload relay K-1303, is excessive, the slow operate overload relay K-1303 will operate. Operated K-1303 opens the "500 W disable" line (opened contacts 2R and 3R of K-1303). As the only effect of opening the "500 W disable" line is to restore the transmitter to the 100-watt level (see paragraph 10e(1)), screen overload protection is provided in 500-

watt operation only. None is required in 100-watt level, as the screen dissipation is far below the maximum allowable level. Opening of the "500 W disable" line by K-1303 also removes ground from the PA SCREEN overload indicator I-1301, extinguishing it to denote overload. When the overload condition is cleared, the SCREEN OVERLOAD RESET push button (K), S-1304, may be depressed, which, in turn, energizes the reset coil of K-1303 from "-24 volts after time delay" to ground. The energized reset coil closes contacts 2R and 3R, restoring the "500 W disable" line. In 100 watt, resistors R-1389 and R-1370 shunt the overload coil. The allowable screen current in 500-watt operation is lower than in 100 watt; therefore, one of the shunting resistors, R-1389, is removed so that the overload coil will react to the lower screen grid current overload condition. R-1389 is disconnected by the open contacts 3L and 4L of K-1304, which is energized for 500 watts.

The rf is bypassed in the screen grid circuit, but a-f changes in screen grid current caused by the corresponding audio changes in the plate voltage, when in phone operation, are not bypassed. These audio changes in screen grid current are amplified by the modulation network of L-1343 and R-1377 so that 100 percent modulation can be obtained in the PA stage. This screen modulation is required for phone operation only and its presence when in cw is detrimental, owing to the transient effect on the screen supply by L-1343, caused by sudden changes in screen current at the instances of "key up" and "key down". Therefore, the action of relay K-1302 is such that the modulation network is shorted out in all modes of operation except phone, as K-1302 is energized from "-24 volts after time delay" to the "ground for phone" line, opening its contacts 1L and 2L and removing the short around L-1343 and R-1377.



- NOTES
1. ONLY ONE OF TWO SECONDARIES OF T-1302 IS SHOWN.
 2. CIRCUIT SHOWN FOR 100 WATT OPERATION OTHER THAN PHONE ON BAND 1.
 3. ONLY THOSE CONTACTS OF K-1304 AND K-1306 AS APPLY IN THIS CIRCUIT ARE SHOWN.

Figure 2-100. PA V-1304, Simplified Schematic

(3) PA PLATE CIRCUIT.—On bands 5 and 6, the PA plate (figures 2-100 and 2-101) is fed through choke L-1316 only; but on other bands, L-1316 is connected to the B+ source through one to four additional r-f chokes, depending on the band selected. Figures 2-100 and 2-101 show the power amplifier on band 1. In this case the PA plate is fed through chokes L-1333, L-1313, L-1314, L-1315, and L-1316. Capac-

itors C-1380 and C-1381 suppress any tendencies of the chokes to resonate under the influence of the audio modulation signal impressed on the plate supply during phone operation. During c-w transmission, the MVPS supplies plate voltage of +1,300 volts for 100-watt operation, and the HVPS supplies +3,000 volts for 500-watt operation. During phone transmission, the MVPS supplies +1,050 volts for 100-watt operation,

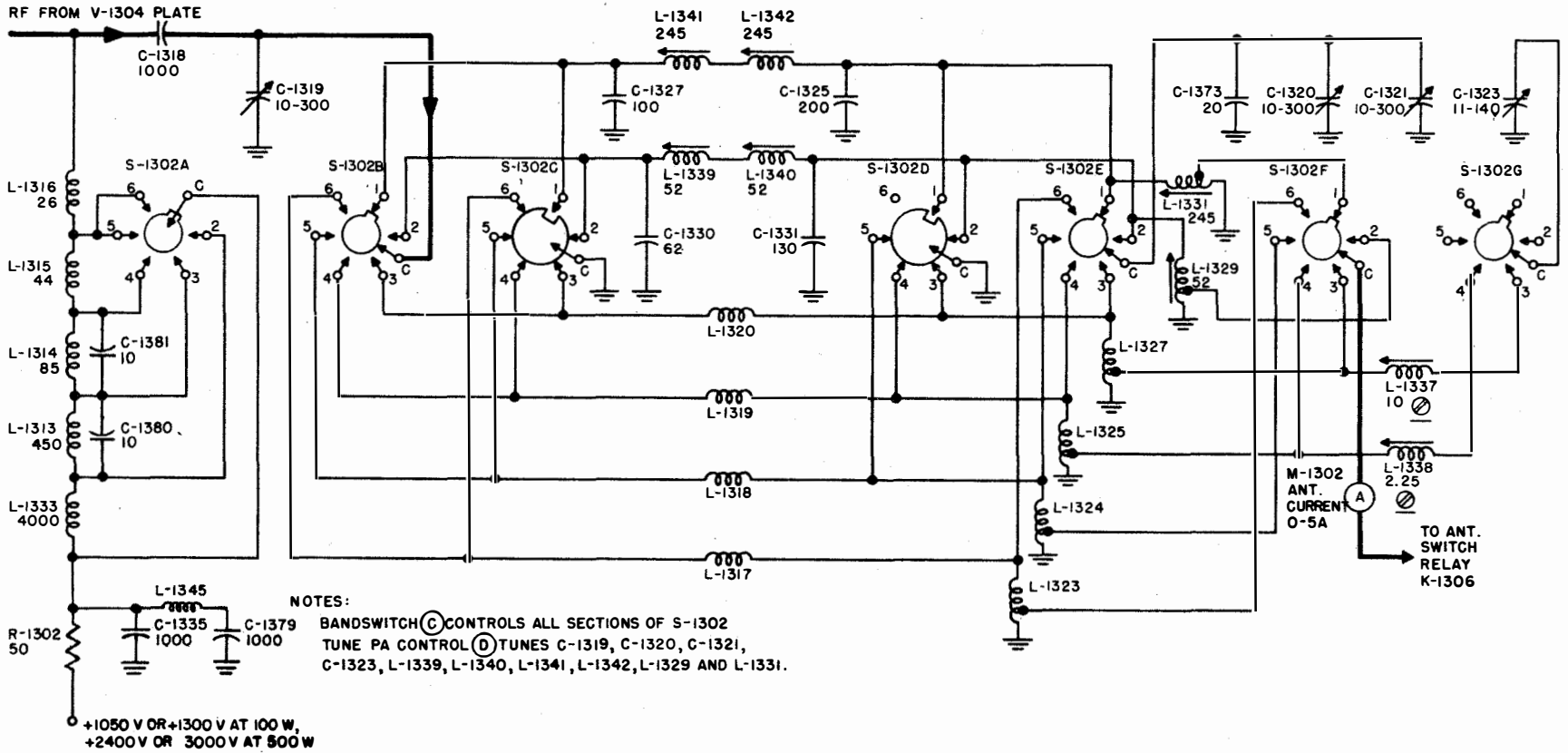


Figure 2-101. PA Harmonic Filter, Complete Schematic

NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A

and the HVPS supplies +2,400 volts for 500-watt operation. PA plate supply voltages are lower for phone transmission than for cw because the PA plate voltage is amplitude-modulated by the audio output of the LLRM or HLRM. If the PA plate voltage were not reduced during phone operation, it would exceed the PA peak voltage rating. R-1302, C-1335, and C-1379 decouple rf from the plate supply line, with L-1345 acting to suppress any tendencies to resonate.

The plate is coupled to the tank circuit (figures 2-100 and 2-101) in band 1 by d-c blocking capacitor C-1318. The PA output is obtained from a tap on the antenna matching coil (L-1331 for band 1) and is fed through the ANT CURRENT ammeter, M-1302, to contact 3L of the antenna switching relay, K-1306. When K-1306 is energized, the output of the PA is connected to the 50-ohm line to the load adjusting unit through contacts 3L and 2L of K-1306 and receptacle J-1304. When K-1306 is not energized, the antenna system is connected to the receiver through contacts 1L and 2L of K-1306 and receptacle J-1305.

If excessive PA plate dissipation takes place, the resultant increase in radiated energy will cause thermostat S-1381 to open the "500 W disable" line, producing the same results as noted in the screen overload discussion. Opening of S-1381 also removes ground from the PA PLATE overload indicator, I-1302, extinguishing it to denote overload.

(4) PA HARMONIC FILTER.—The output circuit of the power amplifier, V-1304, is essentially a harmonic filter (figures 2-101 and 2-102). The components of this filter are determined by the setting of the bandswitch, S-1302, which is ganged to the IPA buffer bandswitch, S-1301, both of which are set by the BANDSWITCH control (C). Bandswitch S-1302A selects the r-f chokes in the PA plate supply circuit. To keep the signal level constant for all frequencies, more inductance is required at the lower frequencies; therefore, on band 1, all the chokes, L-1333, L-1313, L-1314, L-1315, and L-1316, are connected in series in the PA plate circuit. On band 2, L-1333 is shorted. On band 3, L-1313 and L-1333 are shorted, etc., until, on bands 5 and 6, only L-1316 is in the circuit. Switch sections S-1302B and S-1302E select the required tuning inductors, while S-1302C and S-1302D short out the unused tuning inductors. Switch section S-1302E also selects the required antenna matching inductor and connects tuning capacitors C-1320 and C-1321 in parallel with it. Switch section S-1302F couples the output from the impedance matching network to the load adjusting unit. Section S-1302G adds additional impedances to the antenna matching inductor in bands 3 and 4 to form the correct matching network. The effect of the various selections of switch S-1302 is to produce a pi-section filter and output impedance matching network. Figure 2-102 shows the make-up of the filter and matching network for each of the six bands. After the proper components of the filter have been selected, the filter is tuned to maximum output with the TUNE PA control (D). This con-

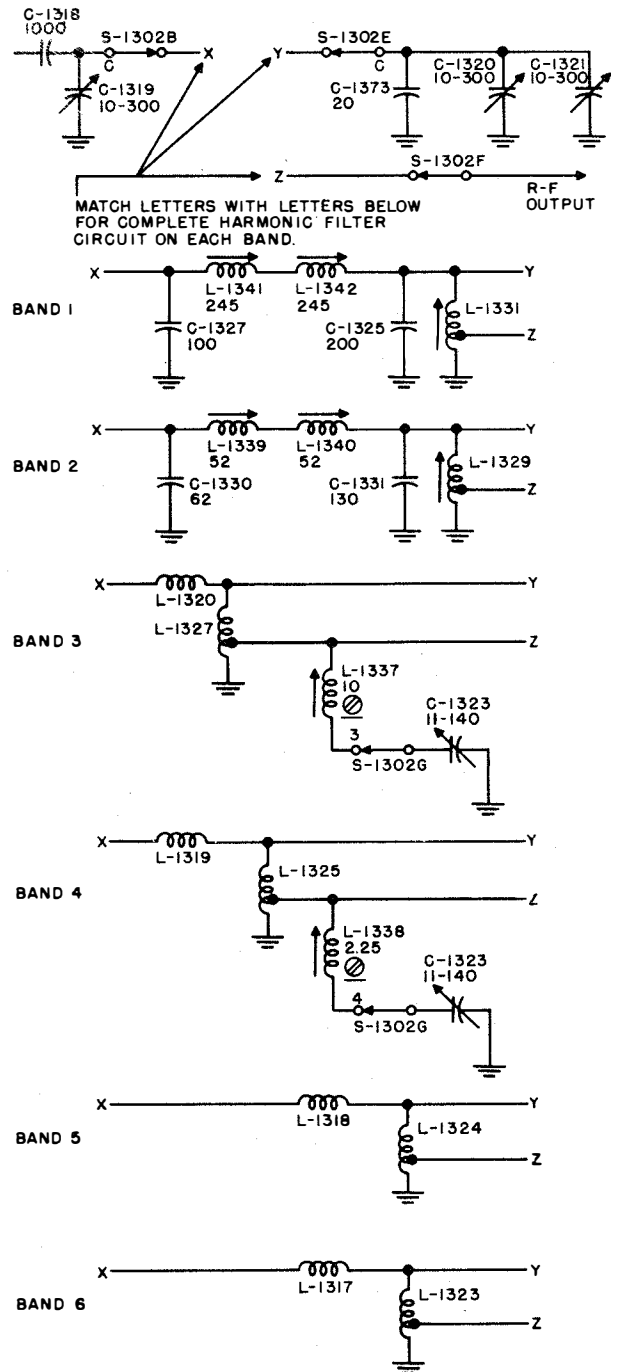


Figure 2-102. PA Harmonic Filter, Simplified Schematic

rol simultaneously tunes capacitors C-1319, C-1320, C-1321, C-1323 and inductors L-1329, L-1331, L-1339, L-1340, L-1341, L-1342.

e. RFA CONTROL CIRCUITS.—In addition to the function of the BANDSWITCH (C), TUNE IPA (B), and TUNE PA (D) controls, the master controlling function for differentiating between 100-watt and 500-watt operation and the antenna switching function are also included in the RFA.

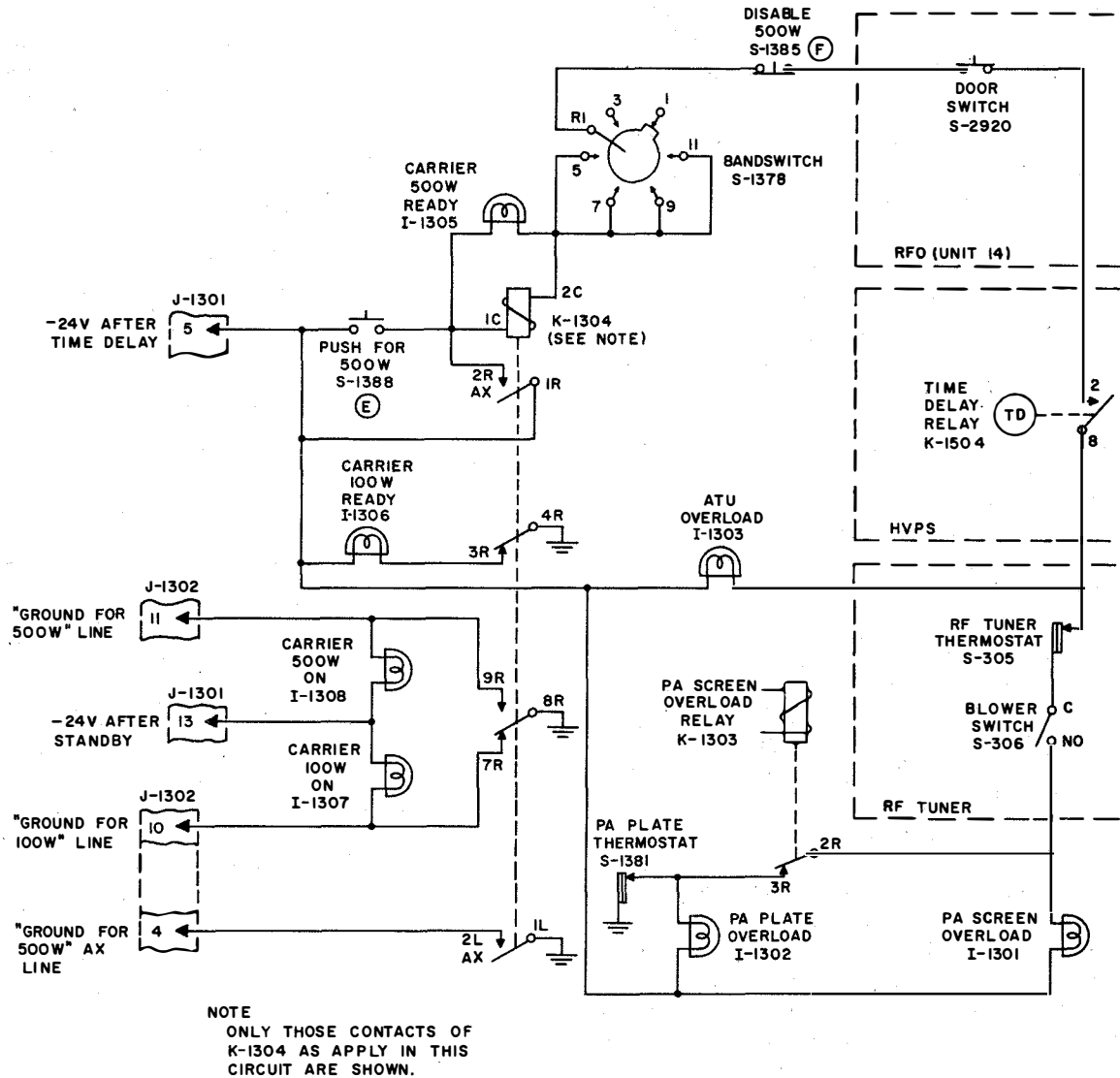


Figure 2-103. 500-Watt Operate Relay K-1304 and 500-Watt Disable Line, Simplified Schematic

(1) 500-WATT OPERATE RELAY K-1304 and "500 W DISABLE" LINE.—In addition to controlling the grid bias supply and screen grid supply of the PA for 500-watt or 100-watt operation (paragraphs 10d(1) and (2)), the 500-watt operate relay, K-1304 (figure 2-103), controls the "ground for 100 W" line and the "ground for 500 W" line, and "ground for 500 W" AX line.

The "ground for 500 W" line and "ground for 500 W" AX line establish the control circuits in the HVPS for turning on the high voltage supply (2,400 volts/3,000 volts); in the LLRM for connecting the output of the LLRM to the input of the HLRM; in the HLRM for switching the input to the PA plate from the LLRM output to the HLRM output; and for supplying screen voltage to the HLRM (in phone operation only). The "ground for 500 W" line and "ground for 500 W" AX line are established when K-1304 is energized, from

ground, through contacts 8R and 9R and 1L and 2L, respectively, of K-1304. The AX line makes slightly ahead of the other so that faulty operation of the control circuits does not occur because of "sneak" paths.

The "ground for 100 W" line is established when K-1304 is not operated. This line establishes the control circuit in the MVPS for turning on the +1,050-volt/+1,300-volt supply, which is required as PA plate supply in 100-watt operation.

It can be seen from the above discussion that if K-1304 is energized, the transmitter group will be in 500-watt operation, and, conversely, when K-1304 is not operated, the transmitter is in 100-watt operation. To place the transmitter in 500-watt operation, the PUSH FOR 500 W push button (E), S-1388, is depressed, which applies "-24 V after time delay" to the winding of K-1304. Ground for operating K-1304 is advanced through a series of controls and protective devices

known as the "500 W disable" line. If any one of these controls or protective devices is not closed, ground cannot reach K-1304, and the transmitter can operate at the 100-watt level only. When K-1304 energizes, "-24 V after time delay" is connected to the winding of K-1304, through its holding contacts 1R and 2R, allowing S-1388 to be released. The following is a list of the components of the "500 W disable" line and their functions in the order in which they are connected in series from K-1304 to ground.

(a) IN THE RFA.

1. Bandswitch S-1378, which is ganged to BANDSWITCH control (C), so that the circuit is closed in all bands except 1 and 2.

2. DISABLE 500 W push button (F) S-1385, which is normally closed; depressing S-1385 opens the circuit.

(b) IN THE RFO (UNIT 14).—Door interlock switch S-2920, which is closed when the door covering the frequency selector knob is closed. When this door is opened to change frequency, S-2920 opens the circuit.

(c) IN THE HVPS.—The time delay relay, K-1504, whose contacts 2 and 8 are open until the high-voltage time delay is over, when K-1504 energizes, closing the circuit through its now closed contacts 2 and 8. This allows the HVPS heaters to warm up before power is applied to the HVPS plate transformer.

(d) IN THE R-F TUNER.

1. Thermostat S-305, which is normally closed except when heat radiated from tuning coil is excessive, causing S-305 to open circuit.

2. Blower switch S-306, a centrifugal switch operated by the blower motor in the r-f tuner. The circuit is closed through S-306 only if the blower is operating.

(e) IN THE RFA.

1. PA screen overload relay K-1303, whose contacts 2R and 3R are normally closed. When K-1303 is energized, because of excessive PA screen grid current, contacts 2R and 3R are opened.

2. PA plate thermostat S-1381, which is normally closed except when energy radiated by excessive PA plate dissipation causes S-1381 to open circuit.

The three overload indicators (I-1301, I-1302, I-1303) are connected from "-24 V after time delay" to ground obtained from the "500 W disable" line, in such a manner that the energizing of any one of the overload protective devices will cause one or more of the indicators to extinguish. Figure 2-103 shows that, if the PA plate thermostat, which is the first in the series chain of overload protection devices, opens, there will be no ground anywhere on the "500 W disable" line, and all three indicators will extinguish. However, if the PA screen overload relay, K-1303, energizes, the PA PLATE overload indicator, I-1302, remains illuminated while the other two indicators are extinguished owing to the fact that I-1302 is connected before K-1303 in the series chain. This same reasoning can be followed for the indications when the r-f tuner protective devices open.

Four indicators controlled by the action of K-1304 indicate the power level of the transmitter and also indicate whether or not the transmitter is on the air.

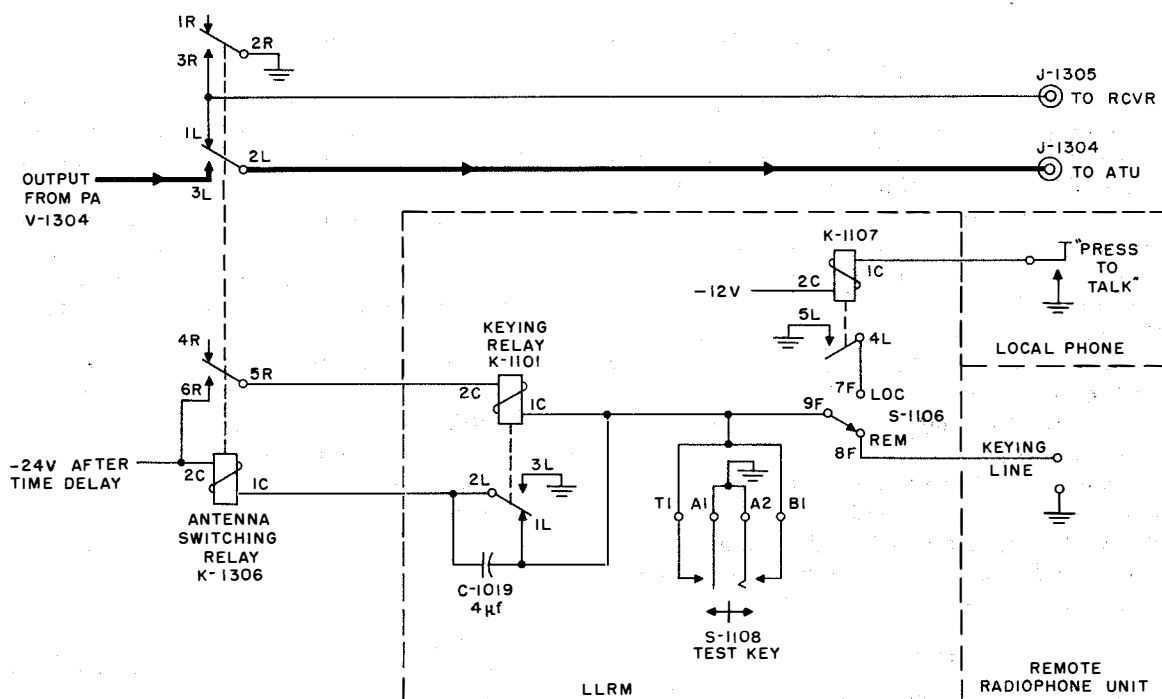


Figure 2-104. Antenna Switching Relay K-1306, Simplified Schematic

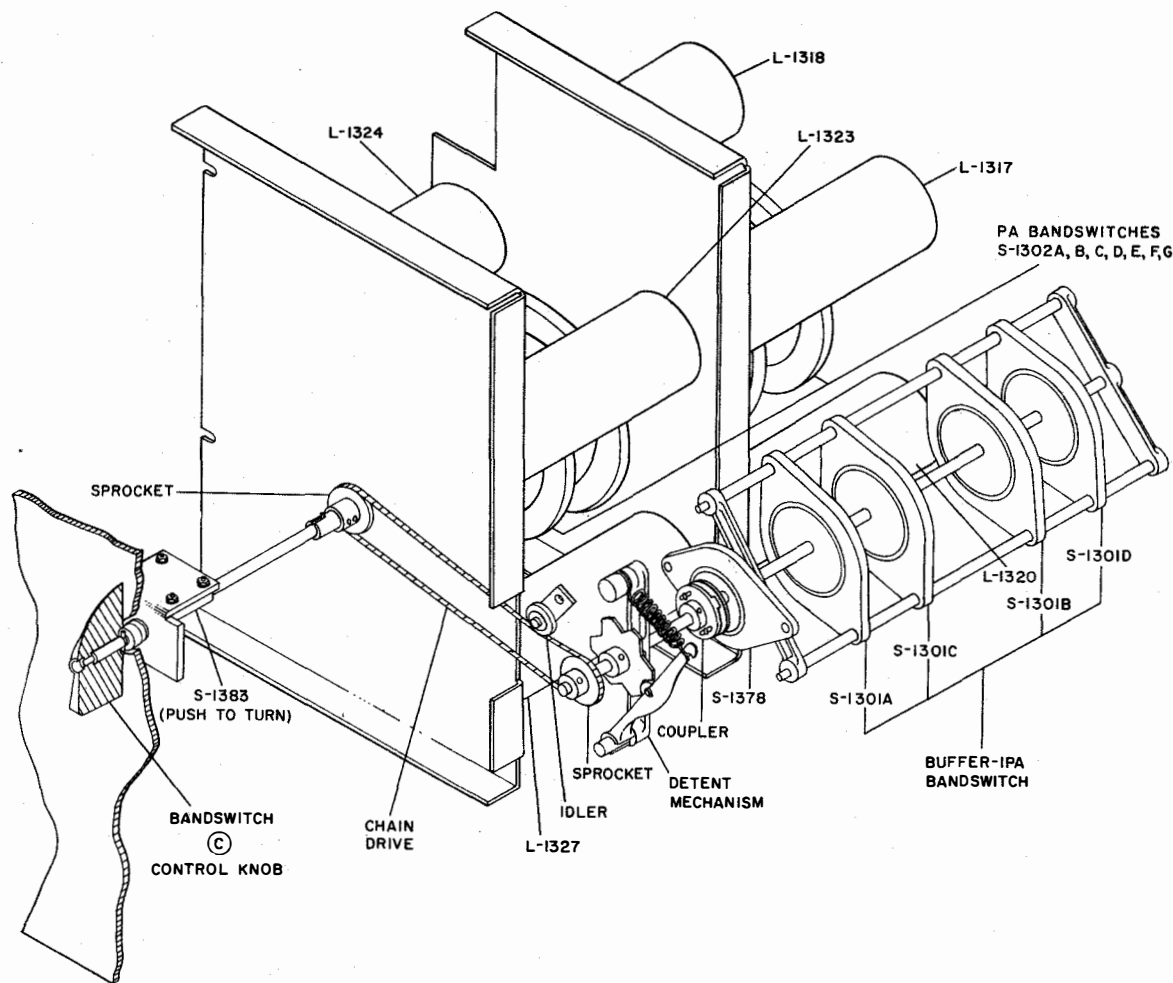


Figure 2-105. Bandswitch, Mechanical Linkages

In 100-watt operation, K-1304 is not energized and ground is connected to the CARRIER-100 W-READY indicator, I-1306, which lights from “-24 V after time delay.” If the STANDBY-OPERATE switch (P), S-3005 in the LVPS (see paragraph 4d), is in OPERATE, the “-24 volts after standby” supply will be on, which, in addition to turning on the power supplies which put the transmitter on the air, also will light the CARRIER-100 W-ON indicator, I-1307, through contacts 7R and 8R of K-1304 to ground. In 500-watt operation, the CARRIER-500 W-READY indicator, I-1305, will light from “-24 volts after time delay” through contacts 1R and 2R of energized K-1304 and to ground, as provided through the “500 W disable” line. If the transmitter is in OPERATE, as described above, the CARRIER-500 W-ON indicator will light from “-24 V after standby” and to ground, through contacts 9R and 8R of energized K-1304.

Note

The above discussion refers to the AN/SRT-15 and 16 only. The AN/SRT-14 operates at the 100-watt level only and does not include

the HVPS. For uniformity, the 500-watt operate relay, K-1304, is included in the AN/SRT-14. However, K-1304 remains inoperative at all times owing to the fact that the “500 W disable” line is nonexistent because of the absence of the HVPS. Therefore, all the functions described above for 100-watt operation are pertinent to the AN/SRT-14.

(2) ANTENNA SWITCHING RELAY K-1306.

—When the transmitter is on the air, the output of the RFA is coupled to the antenna system, but whenever there is no transmission, the antenna system is connected to the receiver. This switching is accomplished by the antenna switch relay, K-1306 (figure 2-104), which is energized only when there is transmission.

In remote hand-key operation, ground is forwarded from the remote radiophone unit, whenever the key is in the mark position, through contacts 1L and 2L of keying relay K-1101 in the LLRM, to K-1306, which then energizes to “-24 V after time delay”. When the hand key is up (in space), there is no ground and

K-1306 is not operated. In paragraph 10b(3) it is shown that the transmitter is keyed on by mark and off by space in c-w operation, so the action of K-1306 follows the keying.

In machine c-w, FSK, and facsimile operation a permanent ground is placed on the keying line, which keeps K-1306 energized at all times.

In phone operation, local or remote, ground is placed on the keying line whenever the press-to-talk button is depressed. Therefore, K-1306 is energized only when the press to talk is depressed. Paragraph 10b(3) also shows that this is the only time the transmitter is on the air in phone operation.

Whenever K-1306 is energized as described above, the output from the PA is connected to the load adjusting unit through contacts 3L and 2L of K-1306 and receptacle J-1304, and the input to the receiver is grounded through contacts 2R and 3R and receptacle J-1305. When K-1306 is not energized, the antenna system is connected to the receiver through receptacle J-1304, contacts 2L and 1L of K-1306 and receptacle J-1305. Also, when K-1306 is energized, it advances "-24 V after time delay" through contacts 6R and 5R to keying relay K-1101 in the LLRM. A description of the function of K-1101 is found in the discussion of the LLRM.

f. BANDSWITCHING.—To cover the entire frequency range of 0.3 to 26 mc, six frequency bands are provided for the buffer, IPA, and PA amplifier stages. Each of the bands numbered 1 to 6 is identical for each of the stages and is selected by the manually operated BANDSWITCH control ⓐ. Each band and its frequency range are listed in table 2-19 below.

TABLE 2-19. FREQUENCY BANDS

| BAND | FREQUENCY RANGE (mc) |
|------|----------------------|
| 1 | 0.3 to 0.8 |
| 2 | 0.8 to 2 |
| 3 | 2 to 5 |
| 4 | 5 to 11 |
| 5 | 11 to 19 |
| 6 | 19 to 26 |

The BANDSWITCH control knob ⓐ is a six-position rotary switch corresponding to each of the six bands (figure 2-105). A push-to-turn feature makes it necessary to push in on the knob before it can be rotated. This forward motion depresses the (PUSH TO TURN) switch, S-1383, whose function is discussed in the LVPS (paragraph 4d). The shaft of the BANDSWITCH control is coupled by a chain drive to a second shaft on which is mounted the bandswitch S-1378, and the buffer IPA bandswitch sections S-1301A, S-1301B, S-1301C, S-1301D. Another coupling links the BANDSWITCH control ⓐ shaft to the PA band-

switch sections S-1302A, S-1302B, S-1302C, S-1302D, S-1302E, S-1302F, and S-1302G. Thus the BANDSWITCH control ⓐ simultaneously positions the buffer, IPA, and PA bandswitches and switch S-1378 and actuates the (PUSH TO TURN) switch, S-1383. The setting of the BANDSWITCH control ⓐ is denoted by the pointer on the knob.

g. BUFFER-IPA TUNING.—When bandswitching is completed, the buffer and IPA tank circuits must be tuned for maximum output. The shaft of the TUNE IPA control ⓑ (figure 2-106) is coupled by chain drive to the dial mounted behind the IPA window. Another chain drive connects the control shaft to a gear box. In the gear box the rotary motion is reversed and a 2-to-1 reduction is introduced. The gear box, in turn, is coupled to the shafting on which is mounted the buffer tuning capacitor, C-1305, and the IPA tuning capacitor, C-1312. The TUNE IPA dial is calibrated from 0 to 100 to indicate whether the tuning capacitors are at the low end (maximum capacity) of the band, the high end (minimum capacity) or at some intermediate point. The dial is notched at the high and low limits of tuning so that the limit cam falls in the notch at the limits. The action of the cam falling in the notch causes the limit assembly to lock the shaft of the TUNE IPA control ⓑ. Maximum tuning of the buffer and IPA is indicated by maximum PA grid drive as shown by a maximum reading on the PA CURRENT meter, M-1303 (figure 2-102), with the PA-METER SELECTOR ⓓ in the I_{c1} position. In tuning, two peaks may be noted on M-1303. The tuning should be set to the maximum at the lowest TUNE PA dial reading to insure that the tuning is to the fundamental frequency and not a harmonic.

b. PA TUNING.—After buffer and IPA tuning are completed, the PA harmonic filter must similarly be tuned for maximum output. The shaft of the TUNE PA control ⓓ (figure 2-107) is coupled by a chain drive to a right-angle drive which transfers the horizontal rotary drive to a vertical drive and then back to a horizontal drive where it couples, with a 10-to-1 reduction, to a shaft on which are mounted the gears and racks and pinions required for tuning the components of the PA harmonic filter. The cores of tuning inductors L-1339, L-1340, L-1341, L-1342, L-1329, L-1331 are mounted on a core-mounting plate assembly by means of adjusting locknuts, adjusted so the tuning inductors tune through the proper range for the frequency band selected. As the shaft is rotated, the mounting plate assembly is moved up or down by rack-and-pinion arrangement which is actuated by gears mounted on the shaft. This moves the cores in or out of the coils to tune the inductors. The adjustable plates of the special vacuum tuning capacitors C-1319, C-1320, and C-1321 are moved in and out of the cylindrical housing by means of a similar rack-and-pinion arrangement. A special spring is mounted eccentrically at the end of the rotary shaft to counterbalance the back pressure caused when the adjustable plates of the vacuum tuning capacitors are moved in. The rotor of tuning capacitor C-1323 is coupled by bevel gears to the shaft.

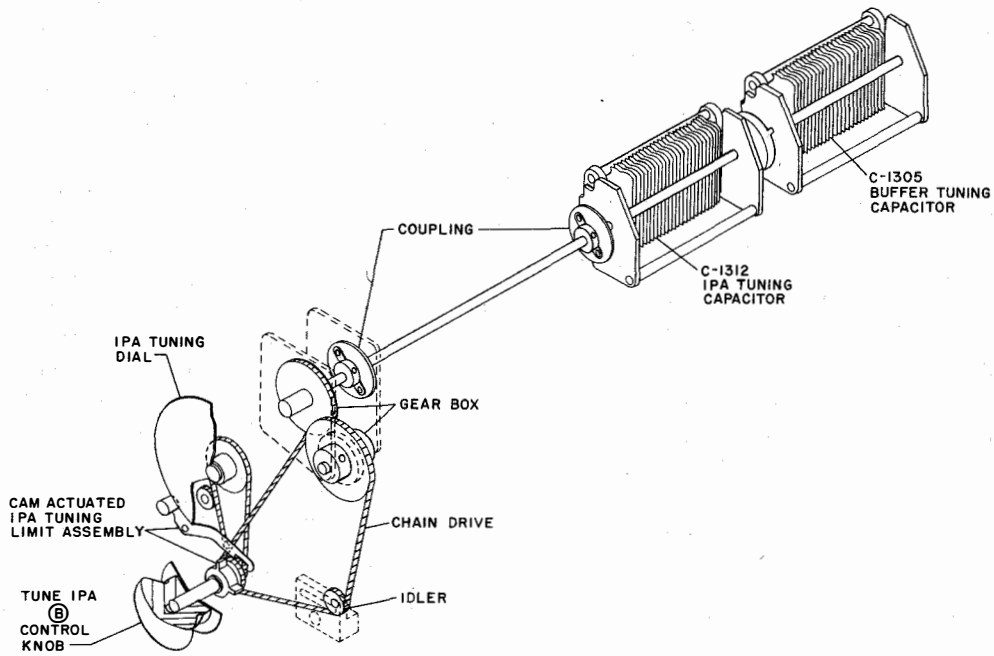


Figure 2-106. Buffer-IPA Tuning, Mechanical Linkages

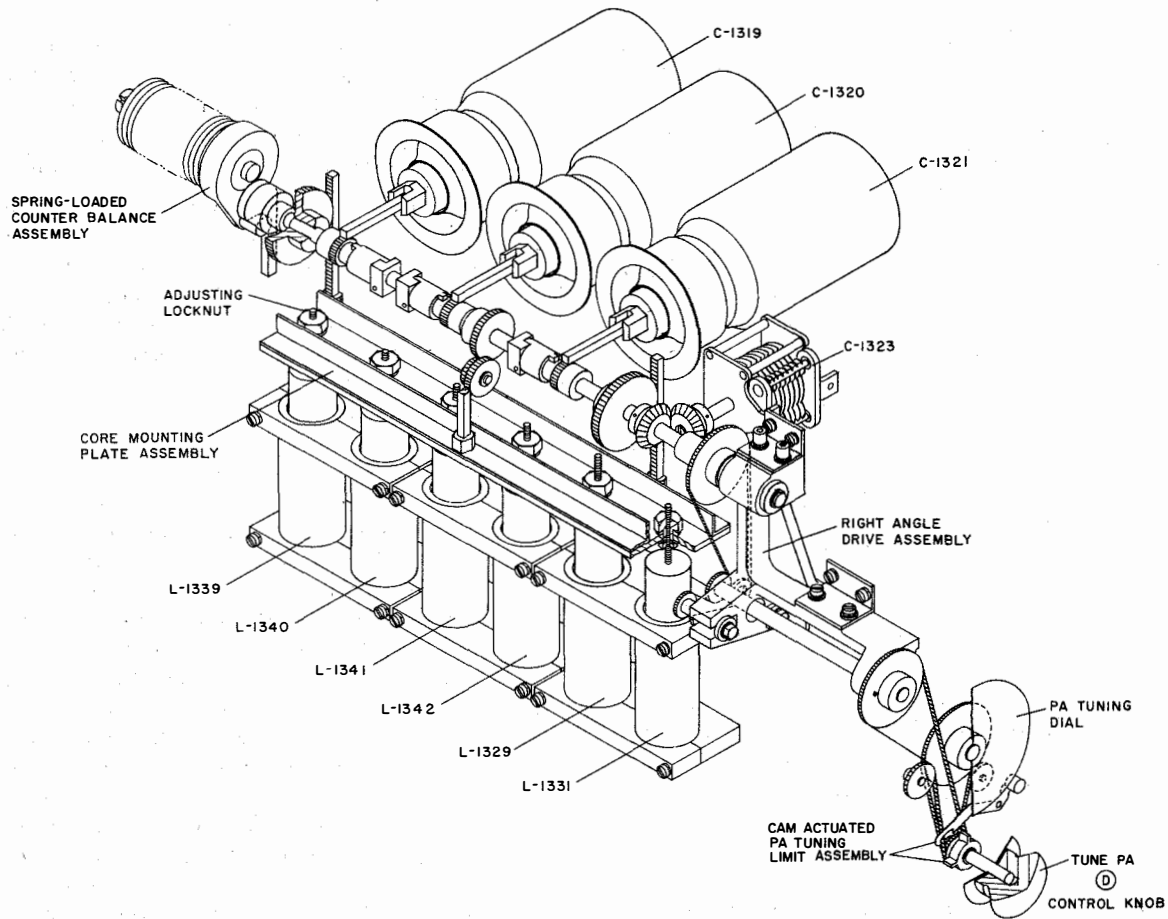


Figure 2-107. PA Tuning, Mechanical Linkages

WARNING

Tuning capacitors C-1319, C-1320, and C-1321 develop voltages which are dangerous to life. Exercise extreme caution when making adjustments near these capacitors.

The shaft of the TUNE PA control (D) is coupled by a chain drive with a 5-to-1 reduction to the PA dial mounted behind the PA window. This is calibrated in a fashion similar to the IPA dial and has the same limiting arrangement as explained for the TUNE IPA. Maximum tuning of the PA harmonic filter is indicated by maximum reading on the PA CURRENT meter, M-1303, with the PA-METER SELECTOR (H) in the I_{c2} position at the lowest setting of the TUNE PA dial.

i. METERING CIRCUITS.—Three meters are provided measuring the various operating voltages and currents in the RFA. These meters are microammeters designated VOLTMETER M-1301, IPA CURRENT M-1304, and PA CURRENT M-1303 (figure 2-108).

(1) VOLTMETER M-1301.—Various operating voltages employed in the RFA, as well as the peak value of the r-f input to the buffer, are selected by the VOLT-METER-METER SELECTOR switch (J), S-1384. As M-1301 is a microammeter the voltages are measured with the meter in series with meter-multiplying resistors located in the circuit to be tested. In the RF IN position, the r-f signal fed to the grid of the buffer, V-1301, is also fed to a network comprised of capacitors C-1328 and C-1309, resistor R-1338, and crystal diode CR-1301, which rectifies the signal and detects the approximate peak value, which is measured by M-1301. Capacitor C-1334 is an r-f bypass for M-1301. The positions of selector switch S-1384, the corresponding quantity measured, the full-scale deflection value of the quantity measured, and the meter-multiplying resistors used are given in table 2-20.

TABLE 2-20. VOLTMETER-METER SELECTOR SWITCH (J) S-1384

| POSITION | MEASURED QUANTITY | FULL-SCALE METER DEFLECTION | METER-MULTIPLYING RESISTOR USED |
|--------------|-------------------------------|-----------------------------|---------------------------------|
| RF IN | R-f input at buffer grid | 5 V | None |
| BIAS SUPPLY | -220-volt bias supply voltage | -500 V | R-1401 |
| LOW VOLTAGE | +300-volt supply | +500 V | R-1318 |
| MED. VOLTAGE | +500-volt supply | +1000 V | R-1317 |
| PA SCREEN | PA screen grid voltage | +1000 V | R-1329 |
| PA PLATE | PA plate voltage | +5000 V | R-1332 through R-1336, incl. |

A receptacle, J-1309, used for checking of audio modulation (see Section 7, paragraph 6a(1)) is connected at the junction of meter-multiplying resistors R-1336 and R-1337.

(2) IPA CURRENT METER M-1304 AND PA CURRENT METER M-1303.—The IPA CURRENT meter, M-1304, and PA CURRENT meter, M-1303, are similar microammeters, used to measure operating currents independently in IPA (V-1303) and PA (V-1304), respectively. To measure these currents, the IPA-METER SELECTOR, switch (G), S-1386, and the PA-METER SELECTOR switch (H), S-1387, connect their respective meters across the shunting resistor that is located in the circuit to be measured. Capacitor C-1332 is an r-f bypass for M-1304, and capacitor C-1333 is an r-f bypass for M-1303. The positions of selector switches S-1386 and S-1387, the corresponding quantity measured, the full-scale deflection value of the quantity measured, and the shunting resistors used are given in tables 2-21 and 2-22.

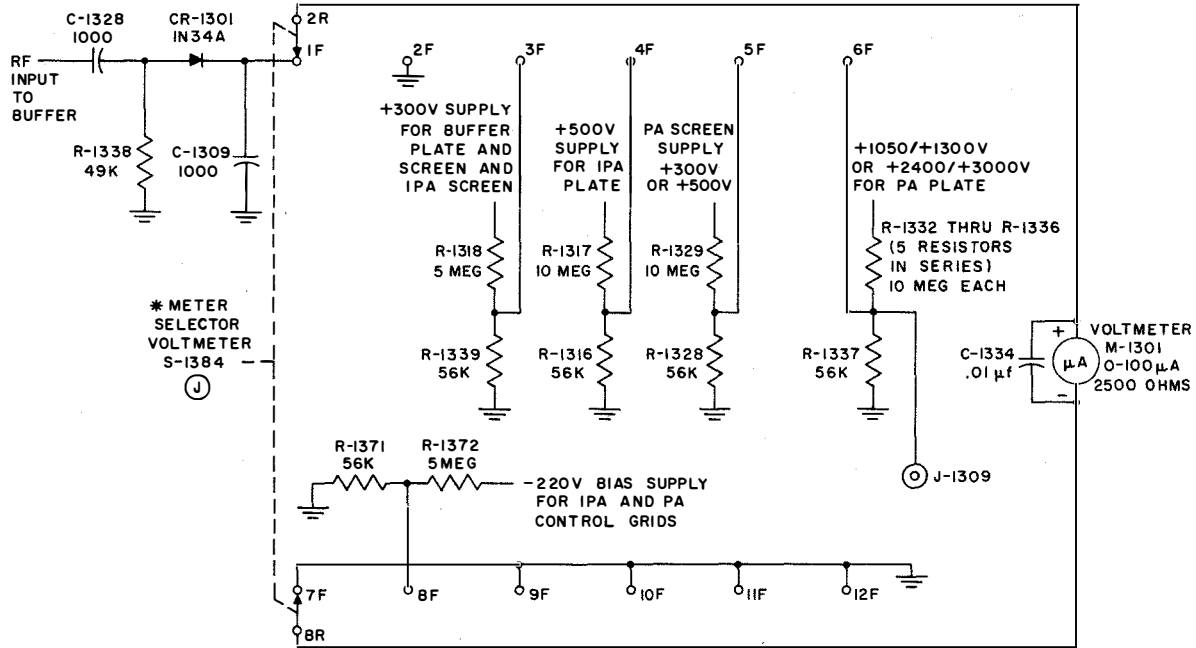
TABLE 2-21. IPA-METER SELECTOR SWITCH (G) S-1386

| POSITION | MEASURED QUANTITY | FULL-SCALE METER DEFLECTION | SHUNTING RESISTOR USED |
|-----------------|--------------------------|-----------------------------|------------------------|
| I _{o1} | IPA control grid current | 5 ma | R-1315 |
| I _{c2} | IPA screen grid current | 10 ma | R-1319 |
| I _k | IPA cathode current | 500 ma | R-1314 |

TABLE 2-22. PA-METER SELECTOR SWITCH (H) S-1387

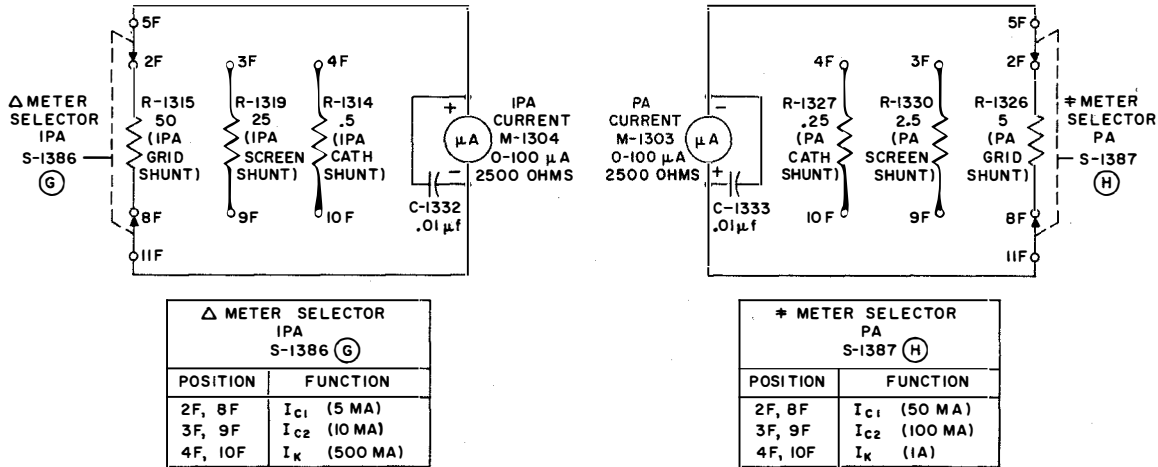
| POSITION | MEASURED QUANTITY | FULL-SCALE METER DEFLECTION | SHUNTING RESISTOR USED |
|-----------------|-------------------------|-----------------------------|------------------------|
| I _{e1} | PA control grid current | 50 ma | R-1326 |
| I _{c2} | PA screen grid current | 100 ma | R-1330 |
| I _k | PA cathode current | 1000 ma | R-1327 |

j. R-F LINE FILTER Z-1301 AND BLOWER MOTOR B-1306.—Single-phase, 110-volt a-c, 60-cycle power is applied through terminals 1, 2, 3 and 9, 10, 11 of receptacle J-1301 to supply power for the RFA blower motor, B-1306, and the primary of the filament transformer, T-1302 (figure 2-109). The power is applied first through a capacity input L-C filter, Z-1301, for each side of the line. This prevents r-f voltages from the filament transformer being fed back into other units through the power line. The power is then fed through fuse F-1301 in one side of the line, to the blower motor, B-1306, and filament transformer primary terminals (terminals 1 and 2 of T-1302). Capacitor C-1310 is the phase-shifting capacitor needed to start and run B-1306.



* METER SELECTOR
VOLT METER
S-1384 (J)

| POSITION | FUNCTION |
|----------|----------------------|
| 1F, 7F | RF IN (+5V) |
| 2F, 8F | BIAS SUPPLY (-500V) |
| 3F, 9F | LOW VOLTAGE (+500V) |
| 4F, 10F | MED VOLTAGE (+1000V) |
| 5F, 11F | PA SCREEN (+1000V) |
| 6F, 12F | PA PLATE (+5000V) |



Δ METER SELECTOR
IPA
S-1386 (G)

| POSITION | FUNCTION |
|----------|------------------|
| 2F, 8F | I_{c1} (5 MA) |
| 3F, 9F | I_{c2} (10 MA) |
| 4F, 10F | I_K (500 MA) |

* METER SELECTOR
PA
S-1387 (H)

| POSITION | FUNCTION |
|----------|-------------------|
| 2F, 8F | I_{c1} (50 MA) |
| 3F, 9F | I_{c2} (100 MA) |
| 4F, 10F | I_K (1A) |

Figure 2-108. Metering Circuits, Simplified Schematic

11. ELECTRICAL EQUIPMENT CABINET CY-1571/
SRT (TRANSMITTER GROUP CABINET).

The transmitter group cabinet houses, from top to bottom, the RFA, LLRM, RFO, LVPS, and MVPS. On the cabinet is the retractable intercabling with the mating connectors for the five slide-in drawers and terminal boards for inputs and outputs to other assemblies of the transmitter. One cabinet is used in the AN/SRT-14 and AN/SRT-15; two are used in the AN/SRT-16. In

a typical AN/SRT-14 and AN/SRT-15 installation, the transmitter group cabinet rests atop Mounting MT-1423/SRT; in the AN/SRT-16, the two cabinets (and mountings) are side by side.

The units in the transmitter group cabinet are removable drawers with mating connectors at their rear. These connectors engage corresponding connectors on the retractable cabinet intercabling, allowing the drawers to remain connected when pulled out. The input and out-

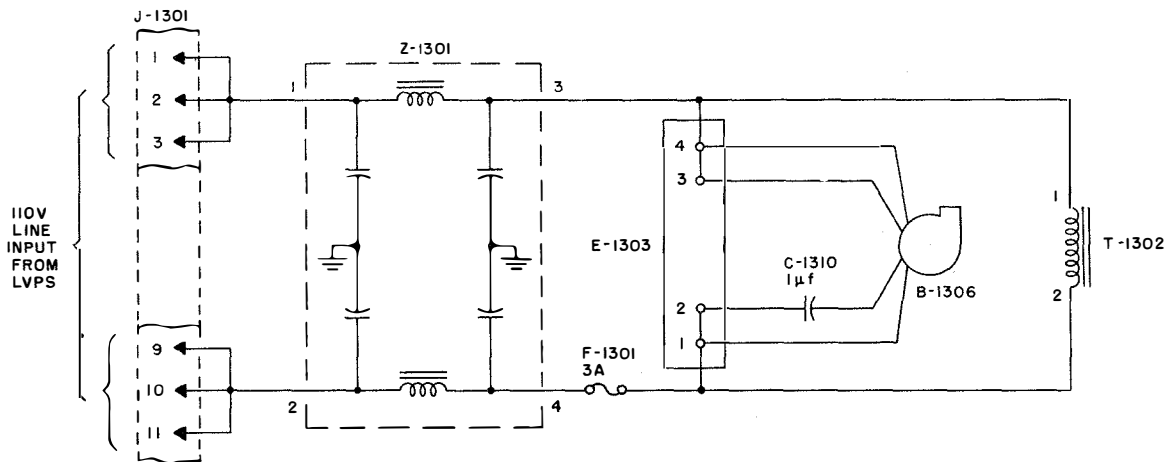


Figure 2-109. R-F Line Filter Z-1301 and Blower Motor B-1306, Simplified Schematic

put connections of these drawers (to units outside of the cabinet) are made at terminal boards E-601 through E-607, located at the bottom of the transmitter group cabinet. (However, the r-f output of the RFA requires special shielding and is fed to the load adjusting unit rather than a terminal board.)

Primary power to the transmitter bay is connected at terminal board E-602, terminals 15 and 16, and thence fed to r-f interference filters Z-601 and Z-602, which filter out any rf picked up in the power supplies, preventing r-f feedback into the primary power source. E-602 terminals 21 and 22 provide an input for uninterrupted 110 volts ac for the RFO oven heaters. This power is fed first through r-f interference filters Z-603 and Z-604. Exact location of Z-601 through Z-604 is shown on the transmitter group control circuit, figure 2-126.

12. ELECTRICAL EQUIPMENT CABINET CY-1572/SRT (HLRM CABINET).

The HLRM cabinet, which houses the high level radio modulator, is used only in the AN/SRT-15 and AN/SRT-16. It contains most of the terminal boards for the booster and has retractable cabling with mating connectors for the HLRM drawer, but no other electrical components. The HLRM cabinet and the HVPS cabinet, together with the units they house, constitute Radio Modulator-Power Supply OA-685/SRT, commonly called the "booster".

13. ELECTRICAL-EQUIPMENT CABINET CY-1573/SRT (HVPS CABINET).

The HVPS cabinet is physically similar to the HLRM cabinet and houses the high voltage power supply (used only in the AN/SRT-15 and AN/SRT-16). It contains retractable cabling with mating connectors for the HVPS drawer and terminal boards. A primary power input of 220- or 440-volt, 60-cycle, three-phase ac from the ship's supply is connected to the booster by means of E-1410 terminals 1, 2, and 3 located on the floor of the HVPS cabinet. Primary power is fed first through

r-f interference filters Z-1401, Z-1402, and Z-1403, the exact location of these filters being shown on the booster control circuit, figure 2-127.

14. MOUNTING MT-1423/SRT (MOUNTING).

a. GENERAL.—The mounting contains two blowers and four heaters. The blowers supply air for cooling the various parts of the transmitter bay. In cold weather the heaters may be used to maintain the transmitter bay at a more favorable temperature during stand-by or nonoperating periods; after the transmitter bay has warmed up sufficiently, the heaters may not be required. One mounting is used in the AN/SRT-14, and two are used in the AN/SRT-15 and AN/SRT-16. Operation of the blower motors and heaters is initiated by means of front panel controls on the LVPS.

b. BLOWERS.—The blowers are placed in operation by depressing the START push button of MAIN POWER switch Ⓡ S-3004 on the LVPS front panel. The blowers continue to operate as long as the equipment is on. In the AN/SRT-16, the blowers in both mountings may be controlled from the LVPS in either the right or left transmitter group. The blowers draw air through three oil-impregnated filters in the front of the mounting. Air passes through the filters into an air chamber, from where it is led through two flexible ducts to the blower housings. The blower rotors force the air through two other flexible ducts into the side ducts of the transmitter group cabinet frames. Baffles are located in the transmitter group cabinet and on the drawer chassis to direct air flow through the equipment.

When the START push button of MAIN POWER switch Ⓡ is depressed, master control relay K-3001 and relay K-3004 are energized (see paragraph 4c), placing motors B-701 and B-702 (figure 2-110) across the 110-volt a-c line. In the AN/SRT-15 and AN/SRT-16, all the motors in both mountings are connected in parallel. (For terminal board connections, see the primary power distribution schematic, and the complete schematic of the mounting in Section 7.) Power is sup-

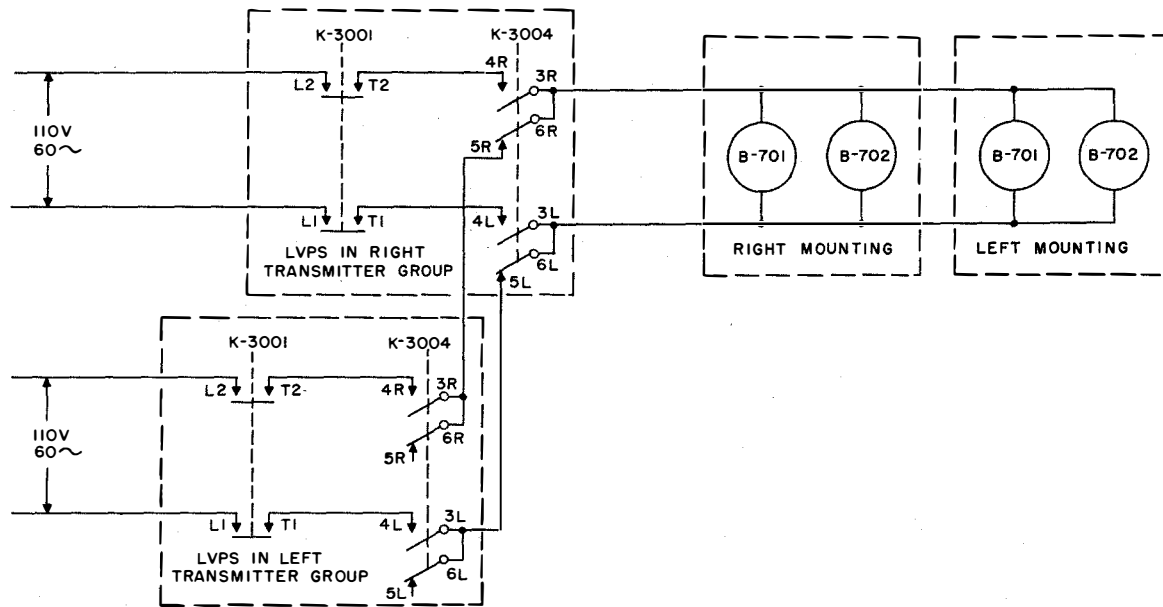
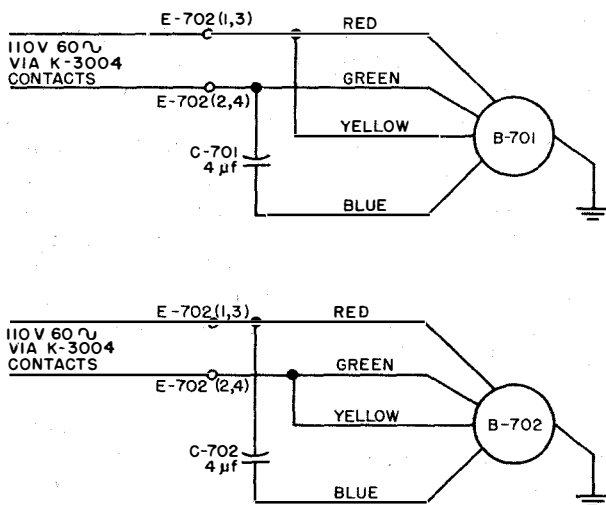


Figure 2-110. Blower Motors B-701 and B-702, Simplified Schematic

plied to the motors from either the right or left transmitter group through contacts of relay K-3004. These capacitor-start-and-run induction motors are designed for continuous duty and operation in ambient temperatures between -20°C . (-4°F .) and $+65^{\circ}\text{C}$. ($+149^{\circ}\text{F}$.) In each mounting, the two motors must run in opposite directions. Motor B-701 runs clockwise and B-702 runs counterclockwise. Although the motors are identical, in other respects, improper ventilation may result if the respective direction of rotation is not kept, because the impellers of B-701 and B-702 are of opposite pitch. The connections which determine the direction of rotation are shown in figure 2-111.

c. HEATERS.—Heating elements HR-701, HR-702, HR-703, and HR-704 (figure 2-112) are used when the temperature is below 16°C . (60°F .) to keep the oven circuits in the RFO at a temperature that permits them to function properly. When the cabinet ambient temperature is less than 16°C . (60°F .), the oven circuits are not capable of raising the temperature inside the oven to the specified 75°C . (167°F .) It may also be desirable to operate the heaters continuously when the equipment is shut down for long periods of time to prevent the condensation of moisture in the equipment. Power to the heating elements is controlled by CABINET HEATER switch Ⓢ S-3002 in the LVPS. When the temperature is between -1°C . (30°F .) and 16°C . (60°F .), heater and transmitter power should be turned on simultaneously, and the heaters should remain on 15 minutes. If the temperature is below -1°C . (30°F .), the heaters must be left on continuously (i.e., for the duration of transmitter operation).



NOTE:
B-701 ROTATES CLOCKWISE, B-702 COUNTERCLOCKWISE
(FACING MOTOR AT END OPPOSITE SHAFT EXTENSION).

Figure 2-111. Blower Motor Connections, Schematic

The four 150-watt heaters are operated on 110 volts ac and are connected in parallel. In the AN/SRT-15, the heater circuits of both mountings are in parallel and receive power from the LVPS. In the AN/SRT-16 the heaters in the two mountings are individually energized from the CABINET HEATER switch Ⓢ in each of the transmitter groups. Therefore, to operate all heaters in the AN/SRT-16, both EMERGENCY SWITCH Ⓢ and the CABINET HEATER switch Ⓢ must be on in the LVPS of both transmitter groups. CABINET HEATER indicator light I-3003 in the LVPS of each transmitter group is illuminated individually as the respective heaters receive power.

**15. TRANSMITTER COUPLER CU-402/SRT
(LOAD ADJUSTING UNIT, LAU).**

a. GENERAL.—The function of the load adjusting unit (LAU) is to improve the impedance match between the characteristic 50-ohm r-f output impedance of the radio frequency amplifier and the impedance presented by the antenna tuning equipment. The improved matching permits the final PA stage of the radio frequency amplifier to operate at optimum plate efficiency and improves the transfer of power to the antenna system. The LAU consists of the standing-wave ratio monitor circuit and the impedance transformer circuit.

b. STANDING-WAVE RATIO MONITOR CIRCUIT.—The function of the standing-wave ratio (SWR) monitor circuit is to detect and monitor the standing-wave ratio present in the r-f transmission line at the output of the radio frequency amplifier. The components of the SWR monitor circuit together form a unit designated Directional Coupler Z-3201 (figure 2-116).

The SWR monitor circuit is composed essentially of two bridge circuits combined with a voltage divider that is tapped to provide the required outputs. One bridge circuit provides a d-c voltage proportional to the reflected and the other bridge circuit provides a d-c voltage proportional to the incident wave in the r-f transmission line. Each bridge circuit utilizes a voltage proportional to the current in the r-f line and a voltage proportional to the voltage in the r-f line.

The r-f transmission line from the RFA is connected through J-3201 to the SWR monitor circuit and thence to the impedance transformer circuit. A voltage, e_{v2} , proportional to the r-f line voltage, is obtained directly from the line through the voltage divider, R-3201, and the d-c blocking capacitor, C-3201, to the crystal rectifier, CR-3202. A second voltage, e_{i2} , proportional to the current in the r-f line, is obtained from one-half of the secondary winding of current transformer T-3202. The center tap of the secondary winding of T-3202 is grounded, providing two voltages, one at each end,

that are 180° apart with respect to each other. Resistors R-3201, R-3202, R-3203, and R-3204 are damping resistors. Voltage e_{i2} , since it is shifted 180° in phase by T-3201, is in phase with the voltage e_{v2} and both voltages add at the junction of CR-3202 and C-3201. Rectifier CR-3202 will conduct only when the voltage e_{v2} is of less value than e_{i2} . When rectifier CR-3202 conducts, a positive d-c potential will exist at the junction of CR-3202 and C-3201 because of the polarity of CR-3202. This resultant positive d-c voltage is proportional to the incident voltage on the transmission line.

A voltage, e_{v1} , proportional to the voltage on the r-f line is obtained directly from the line through voltage divider R-3201 and the d-c blocking capacitor, C-3204, and is applied to the crystal rectifier, CR-3201. Voltage e_{v1} is equal to and in phase with e_{v2} . A second voltage, e_{i1} , proportional to the r-f line current, is obtained from one-half of the secondary winding of T-3202. Voltage e_{i1} is 180° out of phase with voltage e_{i2} , obtained from the other half of T-3202 secondary. Voltage e_{i1} in this case is 180° out of phase with voltage e_{v1} . Rectifier CR-3201 will conduct only when the anode is positive with respect to the cathode. Since voltage e_{i1} is 180° out of phase with e_{v1} , these two voltages will subtract and produce a negative voltage at the junction of CR-3201 and C-3204 proportional to the reflected voltage in the r-f transmission line.

Between the junction of CR-3202 and C-3201, where a d-c potential proportional to the incident voltage is found, and the junction of CR-3201 and C-3204, where a d-c potential of opposite polarity, proportional to the reflected wave, is found, a voltage divider is connected. This voltage divider consists of resistors R-3206, R-3208, then through J-3203 pin B and interconnecting wiring to the control-indicator to pick up resistors R-410, R-415, R-414, R-412, then back to the LAU through J-3203 pin C to resistors R-3209 and R-3207. At some point on this divider there is a voltage equal to the ratio of the reflected voltage to the incident voltage, which bears a simple relationship to the standing-wave

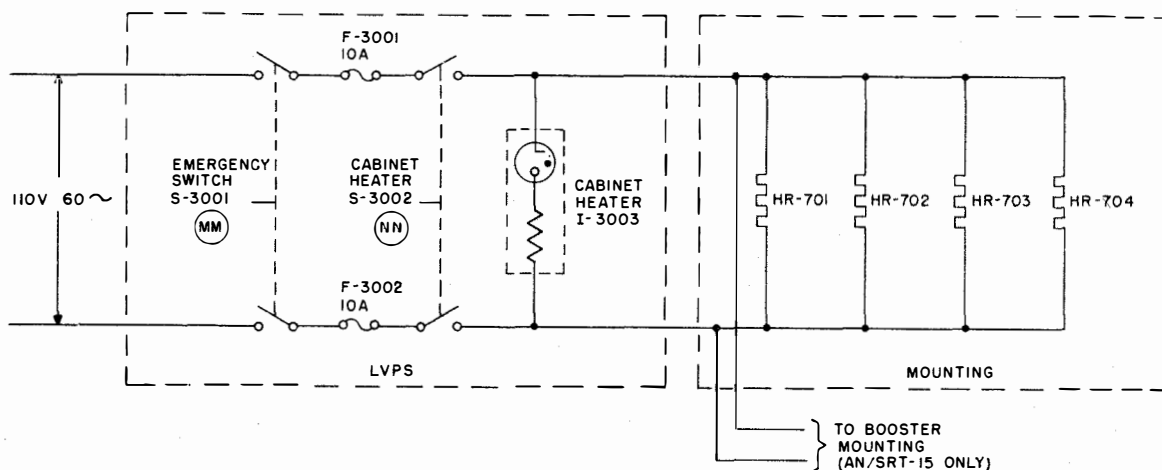


Figure 2-112. Heaters HR-701 Through HR-704, Simplified Schematic

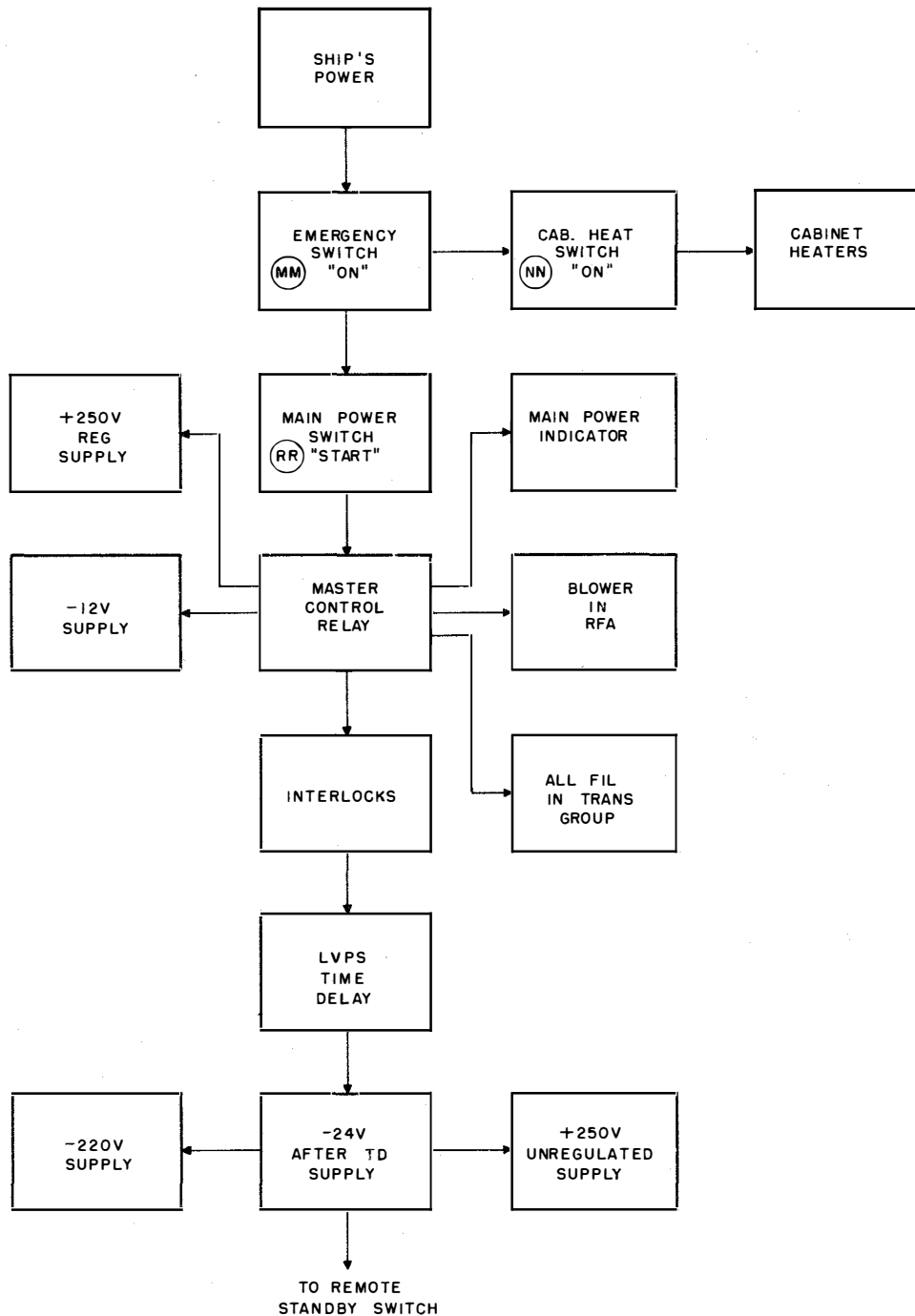
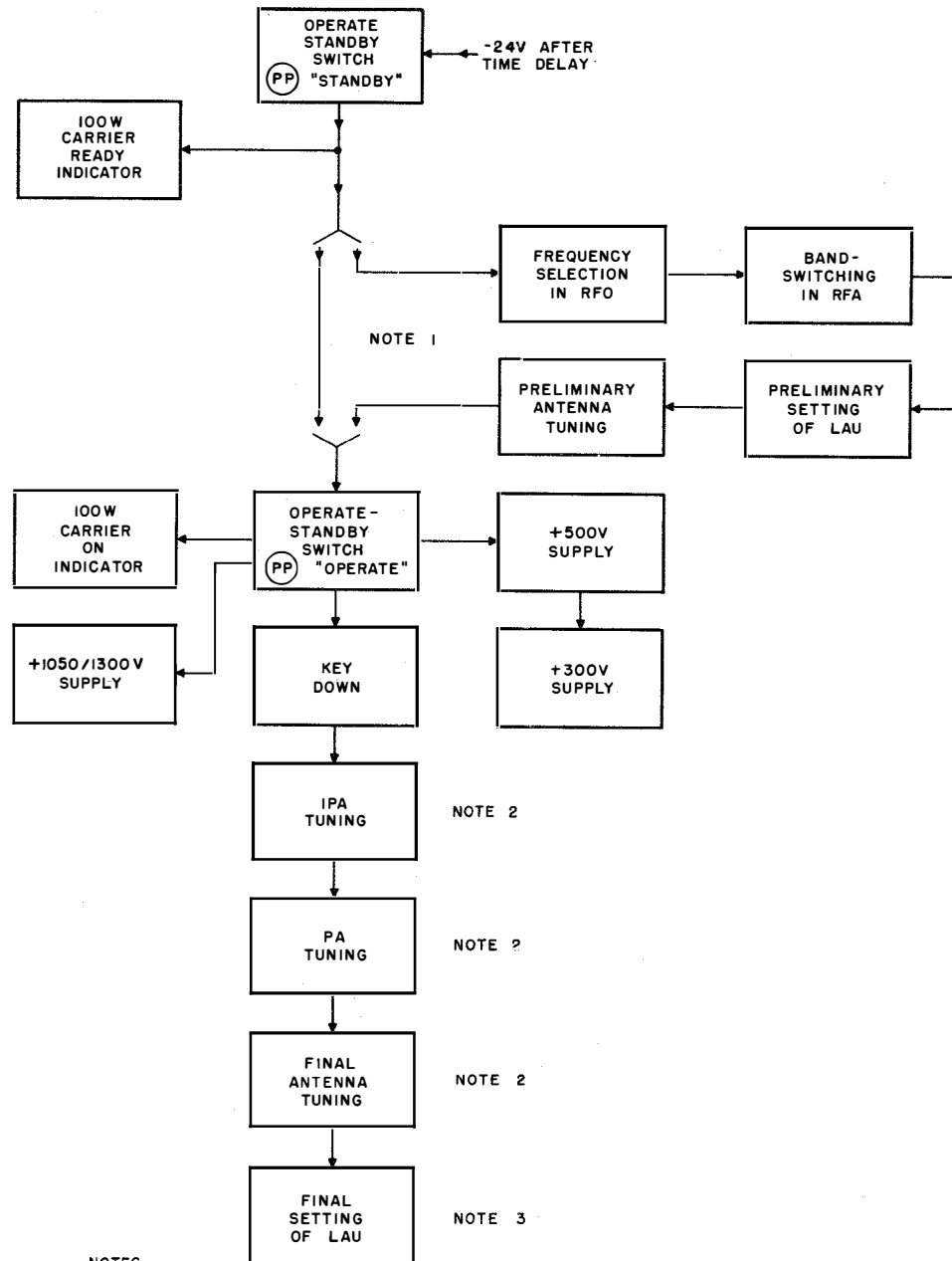


Figure 2-113. Control Circuits Operation Through -24 Volts After Time Delay, Simplified Functional Block Diagram

ratio (SWR). For any value of SWR, there will be a balanced (zero) condition at some point on the divider. The value of R-3201 is such that if there were no reflected current (SWR of 1:1), the d-c voltage at the junction of CR-3201 and C-3204 would be zero, and some positive d-c voltage would exist at the junction of CR-3202 and C-3201. With reflection on the line, d-c voltage at the junction of CR-3201 and C-3204 is nega-

tive and the d-c voltage at the junction of CR-3202 and C-3201 is positive. The zero point lies somewhere on the voltage-divider network. The voltage divider is tapped in the control-indicator unit at points that represent the location of the zero d-c voltage at standing-wave ratios of 8:1, 4:1, and 2:1. Paragraph 2g(6) covers the location of these taps and how the information is transformed to a meter indication of SWR.



NOTES:

1. FREQUENCY SELECTION, BANDSWITCHING, PRELIMINARY SETTING OF LAU, AND PRELIMINARY ANTENNA TUNING APPLY ONLY WHEN A DIFFERENT FREQUENCY IS DESIRED FROM PREVIOUS TRANSMISSION.
2. IPA, PA AND FINAL ANTENNA TUNING NOT REQUIRED WHEN SAME CONDITIONS EXIST AS LAST PREVIOUS TRANSMISSION.
3. FINAL SETTING OF LAU REQUIRED ONLY IF SWR IS GREATER THAN TWO TO ONE.

Figure 2-114. Control Circuits Operation from -24 Volts After Time Delay for 100-Watt Operation, Simplified Functional Block Diagram

c. IMPEDANCE TRANSFORMER CIRCUIT.—To improve the impedance match between the characteristic 50-ohm output impedance of the r-f output from the radio frequency amplifier (RFA) and the impedance presented to RFA by the antenna and the antenna tuning equipment, an autotransformer, T-3201 (figure 2-117), is introduced into the r-f transmission line. The r-f energy from the output of the RFA, after passing

through the SWR monitor circuit, is connected to one of the taps of T-3201 through the contacts of INPUT TAP switch S-3201. The output of the transformer, selected from one of the taps by the position of the OUTPUT TAP switch S-3202, is connected through r-f ammeter M-3201 to J-3202, which is the output to the antenna coupler. With controls (W) and (W) both set at position 4, the full winding of the impedance

transformer is shunted across the line. This is the normal setting of these controls. If, after all tuning procedures have been completed, the measured SWR is higher than 2:1, controls (V) and (W) are set for the optimum impedance match as indicated by the tuning indications of the PA stage of the radio frequency amplifier (see Section 4, paragraph 6a).

16. TRANSMITTER BAY CONTROL CIRCUITS.

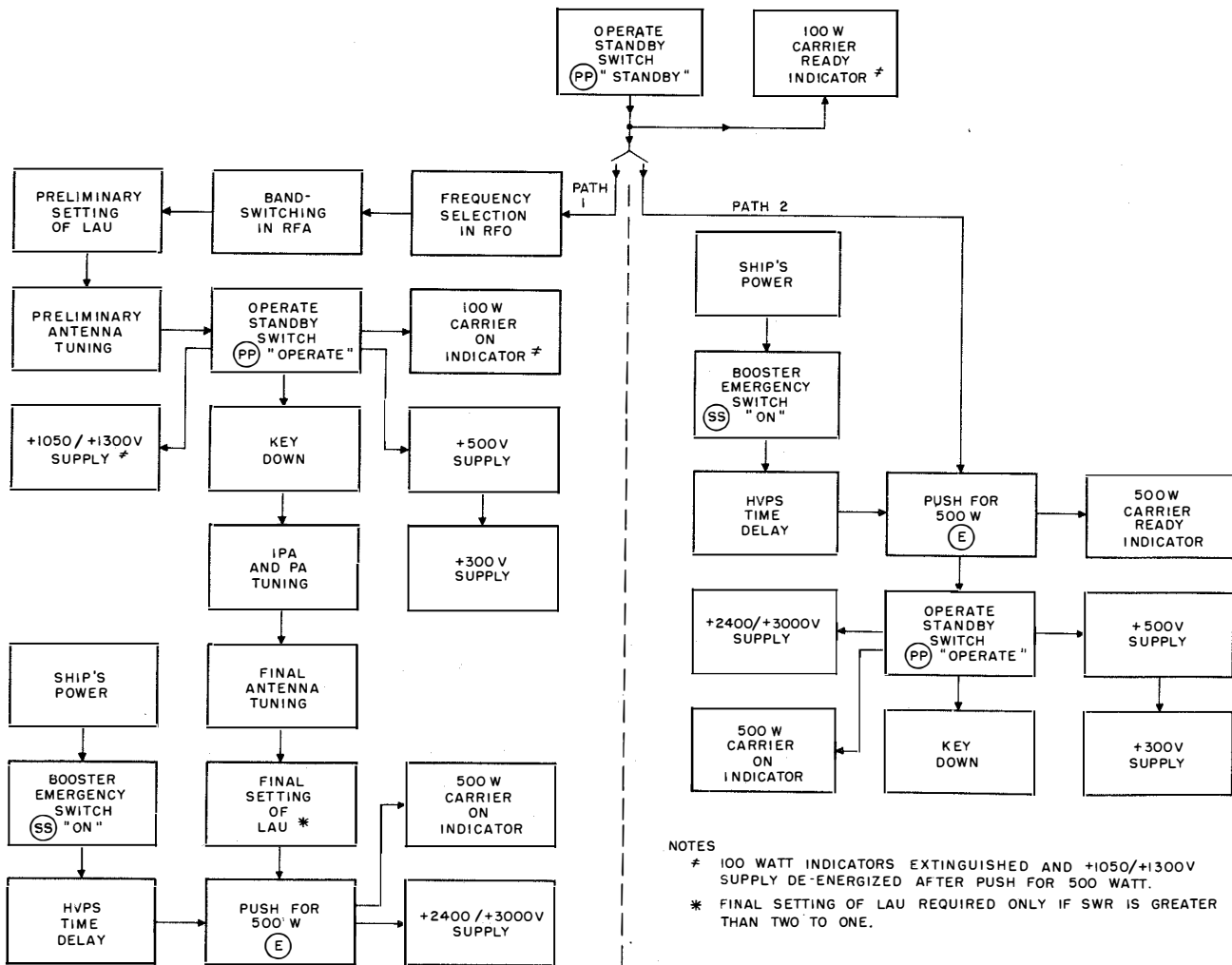
a. GENERAL.—The control circuits located in the transmitter bay have been discussed separately under the descriptions of the various major units to which the individual control functions apply. The following will be a condensed discussion to unite all of the control functions. Included as control functions are the control of power circuits, manual setting up of a frequency in the RFO, manual tuning of the RFA, selection of the output power level, and placing the carrier on the air. Overload and other protection devices are employed to prevent damage to the equipment when operating at the 500-watt level. Various indicator lights show the operating condition of the transmitter bay.

b. SEQUENCE OF OPERATION.—Figures 2-113, 2-114, and 2-115 are simplified functional diagrams showing, in sequence, the operation of the control circuits. Figure 2-113 shows the operation through “-24 V after time delay”, which is the same for either 100-watt or 500-watt operation. Figure 2-114 continues the sequence operation for 100-watt operation; figure 2-115 shows the sequence for 500-watt operation.

Note

As the AN/SRT-14 does not operate at the 500-watt level, the sequence of operation for 500-watt output level applies to the AN/SRT-15 and 16 only.

(1) The main power input (top block of figure 2-113) is 110-volt, 60-cycle, single-phase power received from the ship's supply. EMERGENCY SWITCH (M) controls the power input to the transmitter bay. When switch (M) is closed, power is delivered to the CABINET HEATER switch (N) and to the MAIN POWER switch (R).



NOTES
 ‡ 100 WATT INDICATORS EXTINGUISHED AND +1050/+1300V SUPPLY DE-ENERGIZED AFTER PUSH FOR 500 WATT.
 * FINAL SETTING OF LAU REQUIRED ONLY IF SWR IS GREATER THAN TWO TO ONE.

Figure 2-115. Control Circuits Operation, from -24 Volts After Time Delay for 500-Watt Operation, Simplified Functional Block Diagram

(2) When the start button of switch (Ⓟ) is depressed, the master control relay is energized, which distributes a-c power for the following purposes: to distribute a-c power through the transmitter bay, to energize all filament supplies in the transmitter bay, to energize the blower in the RFA, to energize the MAIN POWER indicator, to turn on the +250-volt regulated and -12-volt power supplies in the LLRM, and, through the interlocks, to energize the LVPS time delay. After the time delay, the "-24 V after time delay" supply is energized, which is a control voltage. With "-24 V after time delay" the -220 V and the +250 V unregulated supplies in the LVPS are energized.

Note

The following sequence applies only with the SERVICE SELECTOR (Ⓢ) on the LLRM set at the HAND position.

(3) At this point for 100-watt operation (figure 2-114), with the STANDBY-OPERATE switch (Ⓟ) in STANDBY, the CARRIER-100W-READY indicator will be energized. If a different frequency is desired from the last previous transmission, the manual settings of the new frequency by the control knobs on the RFO are made at this point in sequence, followed by the corresponding manual bandswitching in the RFA, the initial setting of the two switches on the load adjusting unit, and then initial antenna tuning by the manual controls on the control-indicator. Placing the STANDBY-OPERATE switch (Ⓟ) in OPERATE energizes +500-volt and +1,050/+1,300-volt supplies in the MVPS and energizes the CARRIER-100W-ON indicator. Energizing the +500-volt supply allows the +300-volt supply in the LVPS to energize. Placing the transmitter in a "key down" condition will now energize a carrier, and manual tuning of the IPA and PA stages of the RFA is performed. The final fine antenna tuning adjustments are now made at the control-indicator. Further adjustment of the switches on the load adjusting unit will be required only if satisfactory tuning is not accomplished with the switches in their initial setting.

(4) For 500-watt operation (figure 2-115) after LVPS time delay, and with the STANDBY-OPERATE switch (Ⓟ) in STANDBY, frequency selection, if required, takes place as described in the previous paragraph. The sequence now takes one of two paths, depending on whether or not tuning is required. If tuning is required, this should be done with the transmitter energized at the 100-watt level (path 1), which gives the same sequence of operation as for 100 watts, as explained above. After tuning is complete, the BOOSTER EMERGENCY SWITCH (Ⓢ), which controls power input to the booster, is turned on. This supplies either 220-volt or 440-volt, 60-cycle, three-phase power to the booster, energizing the HVPS time delay. After the time delay is over, the PUSH FOR 500 W button (Ⓢ) is depressed, energizing the +2,400/+3,000-volt supply and the CARRIER-500W-ON indicator. Concurrently, the 100 W indicator and the +1,050/+1,300-volt supply

are de-energized. If no tuning is required (path 2), the booster emergency switch (Ⓢ) is placed in the ON position. When switch (Ⓢ) is closed, the booster receives either 220-volt or 440-volt, 60-cycle, three-phase power from the ship's supply, energizing the HVPS time delay. After the time delay is over, the PUSH FOR 500 W button (Ⓢ) is depressed, energizing the CARRIER-500W-READY indicator. Placing the STANDBY-OPERATE switch (Ⓟ) in OPERATE energizes the +2,400/+3,000-volt supply in the HVPS, the +500-volt supply in the MVPS, the CARRIER-500W-ON indicator (when the +500-volt supply is energized), and it allows the +300-volt supply also to energize. Placing the transmitter in a "key down" condition will now energize the carrier.

(5) The operation of the control circuits in the AN/SRT-14 can be, as described above, for 100 watts only; however, in the AN/SRT-15, operation can be either as described for 100 watts or 500 watts, depending on the power level selected. The AN/SRT-16 has two transmitter groups: one group operates at the 100-watt level only, the other at either 100 watts or 500 watts. Both transmitter groups of the AN/SRT-16 may operate simultaneously. The choice of which transmitter group in the AN/SRT-16 operates at both power levels is made at the time of installation, when the "booster" output is connected to one of the transmitter groups.

Note

In the discussion that follows, reference will be made to other portions of Section 2 where the circuits being analyzed are covered more completely. Figures 2-126 and 2-127 are simplified schematics of the AN/SRT transmitter bay control circuits, excluding those in the left transmitter group. Switches, relays, and relay contacts that are used in the signal circuits of the transmitter are not shown in figures 2-126 and 2-127. Wire numbers are given to aid in following the discussion. The portion of figure 2-126 concerning the control-indicator control circuits is discussed with the r-f tuner and antenna coupler control circuits (paragraph 17d).

c. SUMMARY OF CONTROL CIRCUIT OPERATION.—The LVPS and HVPS receive all the power from the ship's supply. The LVPS receives 110-volt a-c, 60-cycle, single-phase power. The HVPS receives either 220- or 440-volt, three-phase, a-c power from the ship's supply. All other units in the transmitter bay receive a-c power from the LVPS or the HVPS (with the exception of the RFO oven circuits).

(1) POWER CONTROL.—The power input to the transmitter bay is controlled by EMERGENCY SWITCH (Ⓢ), BOOSTER EMERGENCY SWITCH (Ⓢ), and MAIN POWER switch (Ⓟ). The CABINET HEATER switch (Ⓢ) controls power to the cabinet heaters in the mounting.

(a) The transmitter group cabinet receives the input power (110 volts ac) to the LVPS through E-602 terminals 15 and 16 (figure 2-126). The input power is fed first through interference filters Z-601 and Z-602 to E-602 terminals 17 and 18. Wires 215 and 216 deliver the 110 volts ac through J-611 to the LVPS via mating connector J-3003 pins 4 through 8 and 12 through 16. Five pins are used on P-3001 for each side of the incoming line to insure adequate current-carrying capacity. This power is fed to EMERGENCY SWITCH (M) S-3001, which controls power to the transmitter group. With switch (M) closed, power is delivered to the cabinet heaters in the right and left mountings through CABINET HEATER switch (N) S-3003, and its presence is shown by CABINET HEATER indicator light I-3003.

(b) Power is also delivered through fuses F-3007, F-3008 and F-3005, F-3006 to the start-stop circuit and to the INTERLOCK BATTLE SHORT indicator, I-3007, under control of the INTERLOCK BATTLE SHORT switch, S-3007.

(c) The start-stop circuit controls power to the transmitter group and protects personnel. Depressing the START button on MAIN POWER switch (R) S-3004 energizes master control relay K-3001 and MAIN POWER INDICATOR light I-3001. When K-3001 is energized, power is applied to the LVPS rectifiers, the RFA filaments and blower, the RFO filaments, the LLRM filaments, the +250-volt regulated supply and the -12-volt supply in the LLRM, and the MVPS filaments. (For a complete discussion of power distribution, see paragraph 4c.)

(d) The booster (HVPS and HLRM) receives input power (figure 2-127) (220 or 440 volts, three phase, 60 cps) through E-1410 terminals 1, 2, and 3. The input power is fed first through interference filters Z-1401, Z-1402, and Z-1403 to E-1403 terminals 21, 22, and 23. Wires 414, 415, and 416 connect the power to the HVPS through J-1401 and J-1501 pins 1 through 4, 9 through 12, and J-1402 and J-1502 pins 1, 2, 9, 10. This power is then fed to the BOOSTER EMERGENCY SWITCH (S) S-1501, which controls a-c power to the booster. With switch (S) closed, power is fed to the contacts of relay K-1502, through fuses F-1501, F-1502, and F-1503, and one phase is fed through fuses F-1504 and F-1505 to the HLRM and HVPS filaments and to the HVPS time delay. The TIME DELAY indicator light indicates that the HVPS time delay has run out. With the STANDBY-OPERATE switch (P) in OPERATE, the transmitter in 500-watt operation and the HVPS time delay run out, K-1502 energizes and, through its contacts, connects three-phase power to the +2,400/+3,000-volt rectifier. Indicator lights H.V. PRIMARY ϕ 1 (I-1503), H.V. PRIMARY ϕ 2 (I-1502), and H.V. PRIMARY ϕ 3 (I-1501) indicate that power is being applied to the +2,400/+3,000-volt rectifier.

(2) POWER SUPPLIES.—Power supplies providing the various working voltages required are located in the LVPS, HVPS, LLRM, and, for the AN/SRT-15 or 16 only, in the HVPS.

The LVPS (figure 2-126) contains five power supplies: “-24 V after time delay” supply, “-24 V after standby” supply, the -220-volt supply, the +250-volt unregulated supply, and the +300-volt supply.

(a) As soon as the master control relay is operated, a -24 volts, from a metallic rectifier, is fed, through the interlock system, to the time delay relay K-3003. After approximately 30 seconds, K-3003 is operated and a “-24 V after time delay” source becomes available. This is first carried to the (PUSH TO TURN) switch, S-1383, associated with bandswitch in the RFA, by way of J-3001 and J-609 pin 12, through wire 229 to J-601 and J-1301 pin 12. The “-24 V after time delay” is then distributed to the control circuits of the other major units in the following manner: by wire 102 from J-1301 and J-601 pin 5 (in the RFA) to J-603 and J-1101 pin 5 (in the LLRM); then by wire 115 from J-603 pin 5 to J-606 and J-2916 pin 5 (in the RFO); then by wire 126 from J-606 pin 5 to J-609 and J-3001 pin 5 (in the LVPS); then by wire 132 from J-609 pin 5 to J-612 and J-501 pin 5 (in the MVPS); then by wire 161 from J-612 pin 5 to E-607 terminal 87; then by interconnecting cabling to E-1406 terminal 4 (of the HLRM cabinet) (figure 2-127) through wire 304 to J-1403 and J-1601 pin 5 (in the HLRM); and, finally, by interconnecting cabling, from E-1406 terminal 4 to E-1401 terminal 4 (of the HVPS cabinet), through wire 404 to J-1401 and J-1501 pin 5 (in the HVPS). In the LVPS (figure 2-126) the TIME DELAY indicator, I-3002, is illuminated when the “-24 V after time delay” supply becomes energized. The “-24 V after time delay” is delivered to the STANDBY-OPERATE switch (P), S-3005. When S-3005 is closed, the stand-by relay operates, provided there is a ground on the keying line in the LLRM and, through its closed contacts, provides a supply known as the “-24 V after standby” supply. This supply is fed to the control circuits in the RFA by wire 228 from J-3001 and J-609 pin 13 to J-601 and J-1301 pin 13. The “-24 V after standby” is also fed to other control circuits in the following manner: by wire 135 from J-609 pin 13 to J-612 and J-501 pin 13 (in the MVPS); then by wire 166 from J-612 pin 13 to E-607 terminal 94; then by interconnecting cable to E-1406 terminal 5 (of the HLRM cabinet) (figure 2-127), through wire 305 to J-1403 and J-1601 pin 13 (in the HLRM); and, finally, by interconnecting cabling from E-1406 terminal 5 to E-1401 terminal 5 (in the HVPS cabinet), through wire 405 to J-1401 and J-1501 pin 13 (in the HVPS).

(b) When the “-24 V after time delay” supply becomes energized, relay K-3004 operates (figure 2-126). In addition to applying power to the blowers in the mounts, operated K-3004 energizes the -220-volt, +250-volt unregulated and the +300-volt supplies in the LVPS. The output of the -220-volt supply illuminates the -220 V indicator, I-3006, and is delivered to the LLRM from J-3001 and J-609 pin 14, over wire 197 to J-603 and J-1101 pin 14; then it is delivered

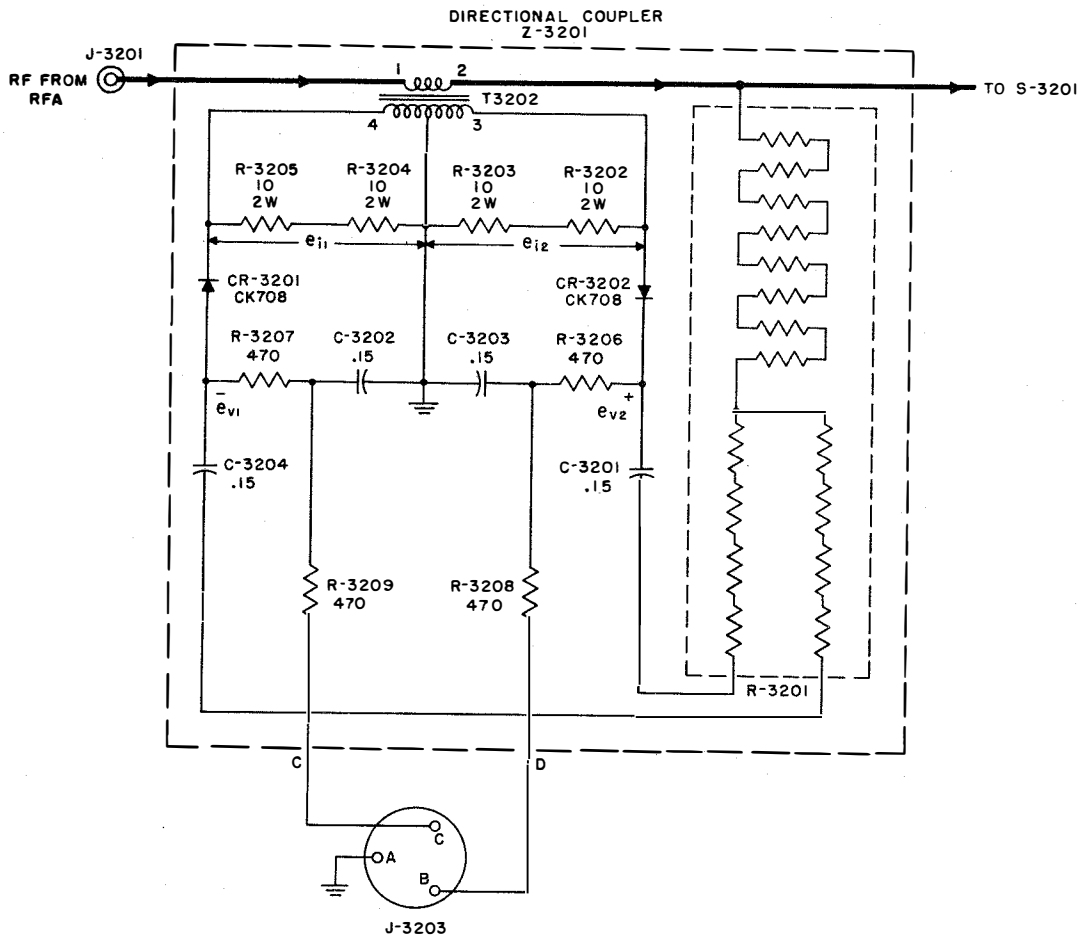


Figure 2-116. Standing-Wave Ratio Monitor Circuit, Simplified Schematic

to the RFA from J-603 pin 14 over wire 106 to J-601 and J-1301 pin 14. The output of the +250-volt unregulated supply illuminates the +250 V indicator, I-3004, and is fed to the RFO from J-3002 and J-610 pin 7 over wire 129 to J-607 and J-2917 pin 7. The output of the +300-volt supply is delivered first to the MVPS from J-3002 and J-601 pin 16, over wire 137 to J-613 and J-502 pin 16. In the MVPS the +300 volts is fed to the contacts of relay K-504. K-504 is energized when the +500-volt supply in the MVPS is energized. With K-504 operated, +300 volts is returned through the contacts 5R and 6R of K-504 to the LVPS by way of J-502 and J-613 pin 8, over wire 136 to J-610 and J-3002 pin 8. In the LVPS, the +300-volt supply is now filtered and the output illuminates the +300 V indicator, I-3005, and is delivered to the LLRM from J-3001 and J-609 pin 6, over wire 196 to J-603 and J-1101 pin 6; then it is fed to the RFA from J-603 pin 6 over wire 103 to J-601 and J-1301 pin 6.

(c) The MVPS contains two power supplies: the +500-volt supply and the +1,050/+1,300-volt supply. The +500-volt supply is turned on when relay K-501 is energized. K-501 operates after the LVPS time delay has run out and with the STANDBY-OPERATE switch $\text{\textcircled{P}}$ in the OPERATE position in either

100-watt or 500-watt operation. As soon as power is applied, through the contacts 2L, 3L and 2R, 3R of K-501, to the plate transformer of the +500-volt supply, the 500 V PRI indicator, I-501, is illuminated. The output of the +500-volt supply illuminates the 500 V OUTPUT indicator, I-503, and is fed first to the LLRM from J-502 and J-613 pin 15, over wire 195 to J-604 and J-1102 pin 15; then it is delivered to the RFA from J-604 pin 15 over wire 113 to J-602 and J-1302 pin 15. The output of the +500-volt supply also energizes relay K-504, which switches on the +300-volt supply as described in the previous paragraph.

(d) The +1,050/+1,300-volt supply is energized when relay K-503 operates. K-503 operates in 100-watt operation only after the LVPS time delay has run out and with the STANDBY-OPERATE switch $\text{\textcircled{P}}$ in the OPERATE position. As soon as power is applied, through the contacts 3L, 4L and 2R, 3R of K-503, to the plate transformer of the +1,050/+1,300-volt supply, the 1300 V PRI indicator, I-502, is illuminated, and when there is an output, the 1300 V OUTPUT indicator, I-504, is illuminated. In all modes of operation except phone, relay K-502 is not energized, and the output of the supply is +1,300 volts. In phone

operation, K-502 is energized, decreasing the secondary-to-primary turns ratio of the plate transformer, thus reducing the output of the supply to +1,050 volts. The output is delivered to the LLRM from J-503 and P-608 over wire 225 to P-605 and J-1107. In the LLRM this voltage is fed to T-1004. In phone operation K-1106 is energized, removing the short from T-1004, and the +1,050-volt supply is modulated. In operations other than phone, K-1106 is not energized and T-1004 is shorted out, having no effect on the +1,300-volt supply. The supply, either +1,050 volts modulated or +1,300 volts unmodulated, is now fed through J-1108 and J-606 over wire 231 to E-608 terminal 1. In an AN/SRT-15 or 16, where there is a booster, the +1,050/+1,300-volt supply is fed to the HLRM through interconnecting cabling from E-608 terminal 1 to E-1408 terminal 3 (in the HLRM cabinet) (figure 2-127) over wire 318 to P-1403 and J-1604. The supply is switched in the HLRM, as explained in paragraph 9(b), and then fed to the RFA. In an AN/SRT-14, which has no booster, the +1,050/+1,300-volt supply is fed directly to the RFA by a jumper from terminal 1 to terminal 2 of E-608, over wire 232 to P-604 and J-1306.

(e) The LLRM contains two power supplies, a +250-volt regulated and a -12-volt supply (figure 2-126), which are used in other major units in addition to the LLRM. As soon as the master control relay in the LVPS is energized by depressing the START button on the MAIN POWER switch (Ⓜ), both the +250-volt regulated and -12-volt supplies are energized. The output of the +250-volt regulated supply illuminates the 250 V.P.S. indicator, I-1001. This supply is used for a plate supply in the LLRM and also is supplied to the RFO through J-1102 and J-604 pin 12, over wire 121 to J-607 and J-2917 pin 12. The -12-volt supply provides power for operating the carbon microphone and press-to-talk relay K-1107 in the LLRM and is supplied to the control circuits of the remote radiophone unit through J-1102 and J-604 pin 7, over wire 209 to E-601 terminal 7, and interconnecting cabling to the remote radiophone unit.

(f) The HVPS, which is a component of the AN/SRT-15 and 16 only, contains the +2,400/+3,000-volt supply used in the RFA as PA plate supply in 500-watt operation (figure 2-127). The output is +2,400 volts for phone operation, +3,000 volts in other modes of operation. The supply is fed to the HLRM from J-1503 and P-1401, over wire 417 to E-1404 terminal 1 (in the HVPS cabinet); then over interconnecting cabling to E-1408 terminal 2 (in the HLRM cabinet), over wire 317 to P-1402 and J-1603. In the HLRM, the supply is filtered and delivered to T-1601. In phone operation, relay K-1603 is energized, removing the short from T-1601, and the +2,400-volt supply is modulated. In other modes of operation, K-1603 is not energized, and T-1601 is shorted out, having no effect on the +3,000-volt supply. The supply, whether +2,400 volts modulated or +3,000 volts unmodulated, is fed through

J-1605 and P-1404, over wire 316 to E-1408 terminal 1, through interconnecting cabling to E-608 terminal 2 (in the transmitter group cabinet) (figure 2-126) over wire 232 to P-604 and J-1306 in the RFA.

(3) FREQUENCY SELECTION.—At this point of the operation, it is assumed that all power has been turned on, the time delays have run out, and the STANDBY-OPERATE switch (Ⓟ) is in the STANDBY position. If a frequency of different value from that of the last previous transmission is desired, the selection of the new value is now made in the RFO. Frequency selection in the AN/SRT-14, 15 and 16 is accomplished by the manual setting of nine frequency selection knobs located behind a door on the RFO front panel. To change frequency, the door must first be opened; this opens door switch S-2920, whose function is to reduce the carrier level to 100 watts if someone should attempt to change frequency with a 500-watt carrier on. Paragraph 10e(1) describes this action in more detail. After the door is opened, the nine knobs are set according to the instructions appearing on the front panel; then the door is closed, completing the frequency selection.

(4) BANDSWITCHING.—Bandswitching in the AN/SRT-14, 15 and 16 also is a manual function and is accomplished by the appropriate setting of the BANDSWITCH (Ⓢ) in the RFA according to the frequency selected for transmission.

(5) LOAD ADJUSTING UNIT TUNING.—With the transmitter in stand-by the INPUT TAP (Ⓢ) and OUTPUT TAP (Ⓢ) are both set at 4. After all other tuning is completed and SWR as recorded on the SWR BALANCE meter on the control indicator is still greater than 2:1, (Ⓢ) and (Ⓢ) controls must be changed to improve the standing-wave ratio.

(6) IPA AND PA TUNING.—As in the case of frequency selection, IPA and PA tuning are required only if a new frequency is selected, or if there is some other reason that the transmitter is not in the same condition as that of the previous transmission. At this point, the RFA must be energized and a signal sent to it from the RFO. This is accomplished by placing the STANDBY-OPERATE switch (Ⓟ) in OPERATE and, with the SERVICE SELECTOR (Ⓢ) in the HAND position, depressing the TEST KEY, (Ⓢ). The IPA and buffer tank circuits are tuned first by manually tuning the TUNE IPA control (Ⓢ) to obtain maximum PA grid drive as measured on the PA CURRENT meter, M-1303, with PA METER SELECTOR (Ⓢ) in the I_{c1} position. After IPA tuning is complete, the tank circuit of the PA is tuned by manually controlling the TUNE PA control (Ⓢ) to maintain maximum PA screen grid current as measured on the PA current meter, M-1303, with PA METER SELECTOR (Ⓢ) in the I_{c2} position.

(7) ANTENNA TUNING.—Preliminary antenna tuning takes place at the same time as frequency selection and bandswitching, that is, with the transmitter in stand-by. Final antenna tuning is accomplished after IPA

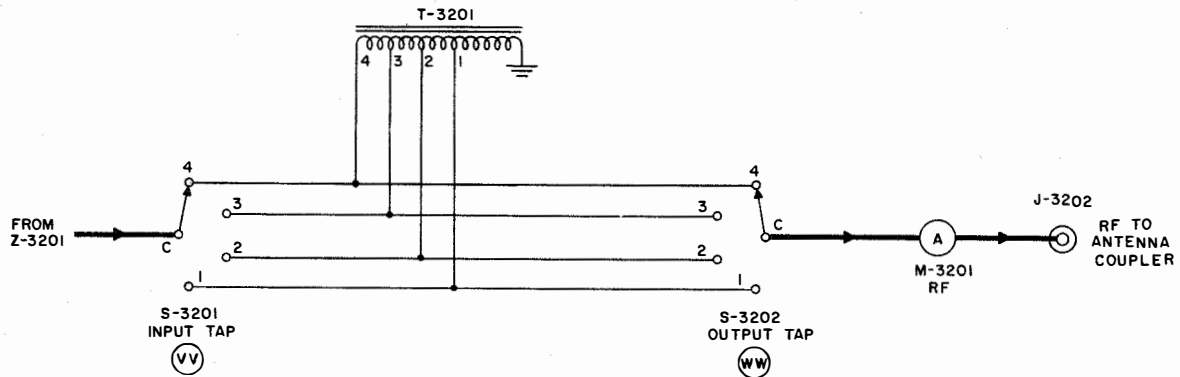


Figure 2-117. Impedance Transformer Circuit, Simplified Schematic

and PA tuning with a carrier energized. A complete discussion of the control circuits involved in antenna tuning is covered in paragraph 17d.

(8) CARRIER ON.—With all power on, all time delays run out and all tuning functions complete, the equipment is prepared for transmission. Five services are available and chosen by the SERVICE SELECTOR Ⓢ, located on the LLRM front panel. These services are: hand key, machine key, frequency-shift key, facsimile, and phone. Any of the above services can be operated at either the 100-watt level or 500-watt level. The transmitter group is in 100-watt operation as long as the 500-watt operate relay K-1304 is not energized and, conversely, is in 500-watt operation when K-1304 is operated.

(a) HAND-KEY OPERATION. — When the SERVICE SELECTOR Ⓢ is in the HAND position, the carrier can be placed on the air by the TEST KEY Ⓣ or by depressing an external key connected to a remote radiophone unit. Depressing the key operates the keying relay, K-1101, which, in turn, activates the keying circuit of the LLRM to key on the transmitter. "Key down" also energizes the ATU bypass transfer circuit and the antenna switching relay, K-1306, in the RFA, whose functions are described in paragraphs 7g and 10e(2), respectively.

(b) MACHINE-KEY OPERATION.—When the SERVICE SELECTOR Ⓢ is in the MACH position, keying signals from teletype or other machine equipment are received to trigger the keying circuit of LLRM to key the transmitter. Concurrently, the keying line must be permanently closed in machine-key operation to keep the keying relay, K-1101, and the antenna switching relay, K-1306, permanently energized so that the "–24 V after standby" line remains energized and the antenna remains connected to the RFA output during machine-key transmissions. This also provides a permanent signal for the ATU bypass transfer circuit.

(c) FREQUENCY-SHIFT KEY OPERATION.—When the SERVICE SELECTOR Ⓢ is in the FSK position, the carrier remains on the air. Keying signals are received from machine-key equipment that triggers the keying circuit of the LLRM. In this case, the keying

output is used to frequency-modulate the carrier instead of keying the carrier on and off. As for the MACH position described above, a permanent signal must be applied to the keying line for FSK operation.

(d) FACSIMILE OPERATION.—With switch Ⓢ in the FAX position, a permanent signal must be applied to the keying line, as in the MACH and FSK positions, to keep the carrier on the air. There is no keying function in this operation and the signal from the facsimile equipment is fed to the RFO to frequency-modulate the carrier.

(e) PHONE OPERATION.—In the PHONE position of switch Ⓢ a special line of ground potential is established known as the "ground for phone" line. The presence of this ground energizes K-1106 in the LLRM, which removes the short from T-1004, and allows the plate supply of the PA to be audio-modulated. This line also energizes K-502 in the MVPS, which reduces the turns ratio of T-502, reducing the output of the +1,300-volt supply to +1,050 volts. This supply is the PA plate supply in 100-watt operation only. Through contacts of energized K-502, a source of ground potential, present in 500 watts only, is supplied to energize K-1601 in the HLRM, which turns on the screen supply for the HLRM. K-1601, in turn, energizes K-1603, which removes the short from T-1601, permitting the PA plate supply to be audio-modulated. Also in 500-watt operation, "ground for phone" energizes K-1501 in the HVPS, which reduces the turns ratio of T-1502, thus reducing the output of the +3,000-volt supply to +2,400 volts. Placing switch Ⓢ in the PHONE position also connects the keying line to the phone output so that the press-to-talk button operates the keying relay in the same manner as the hand key does when switch Ⓢ is in the HAND position. Therefore, press to talk keys the transmitter carrier on and off, controls the antenna switching function, and controls the output of the ATU bypass transfer circuit.

(f) 100-WATT OPERATION.—When all the operations for energizing the transmitter are followed, as described previously, and transmitter is keyed-on, transmission will be at the 100-watt level unless K-1304 in the RFA is energized. With K-1304 not operated, a

ground supply known as the "ground for 100 W" line is established. This line energizes the +500-volt and +1,050/+1,300-volt supplies by energizing relay K-503 and K-501 in the MVPS. This line also supplies a ground to illuminate the CARRIER-100 W-READY and CARRIER-100 W-ON indicators. The screen supply to the PA is also controlled by K-1304, and with K-1304 not operated in 100 watts, +300 volts is applied to the PA screen.

(g) 500-WATT OPERATION.—To change the transmitter from the 100-watt level to 500 watts, the plate and screen supplies of the PA are increased and, in phone, the power of the audio modulating signal is increased. To accomplish this, K-1304 is energized by depressing the PUSH FOR 500 W button (E) on the RFA. With K-1304 energized, the "ground for 100 W" line is opened, and in its place two other sources of ground potential known as the "ground for 500 W" and "ground for 500 W" AX lines are established. The latter is established slightly ahead of the former as K-1304 energizes, to prevent a false operation of the control circuits due to "sneak paths". As the "ground for 100 W" line is no longer present, the +1,050/+1,300-volt supply is no longer energized, and, in its place, the +2,400/+3,000-volt supply is energized by the operation of K-1502 through the "ground for 500 W" line (assuming the BOOSTER EMERGENCY SWITCH (S) has been previously turned ON and that the HVPS time delay has run out). As described in phone operation, the "ground for 500 W" line also energizes K-1603 in the HLRM. The "ground for 500 W" AX line energizes K-1104 in the LLRM, which connects the 6-watt output winding of modulation transformer T-1004 to the input of the HLRM to permit amplification of the modulation signal for 500 watts. This ground supply also operates K-1605 in the HLRM, which switches the PA plate supply from the output of the LLRM to the output of the HLRM for 500 watts. Energized K-1304 also changes the PA screen supply from +300 volts to +500 volts and illuminates the CARRIER-500 W-READY and CARRIER-500 W-ON indicators. The ground return for operating K-1304 passes through several auxiliary protective devices, any one of which, if activated, will open this ground return, de-energizing K-1304 and thus returning the transmitter to the 100-watt level. These protective devices are: bandswitch S-1378 in the RFA; DISABLE 500 W switch (F) S-1385 in the RFA; door interlock switch S-2920 in the RFO unit 14; time delay relay K-1504 in the HVPS; thermostat S-305 and blower switch S-306 in the r-f tuner; PA screen overload relay K-1303 and PA plate overload thermostat S-1381 in the RFA. The detailed functioning of these devices is described completely in paragraph 10e(1).

17. ANTENNA TUNING EQUIPMENT.

a. GENERAL.—The customary antennas used in the frequency range in which the AN/SRT-14, 15 and 16 operate (0.3 to 26 mc) are grounded vertical antennas.

For any given frequency the impedance presented to the transmission line can be expressed in terms of $R + jX$. The r-f output from the radio frequency amplifier works into a characteristic impedance of 50 ohms. Whenever the antenna presents an impedance other than 50 ohms, energy that is being reflected back on the transmission line reduces the energy being radiated and causes high-voltage nodes along the line. The standing-wave ratio measurement is an indication of the mismatch. The ideal matching of the antenna load to the RFA output (SWR 1:1) would be to have the reactive component of the antenna impedance reduced to zero and have the resistive component equal to 50 ohms. However, acceptable tuning of the antenna load by the antenna tuning equipment is achieved if the standing-wave ratio is reduced to at least 4:1 for any frequency in the range.

The antenna characteristic is such that it is resonant (zero reactance) for any given frequency if its length is some multiple of quarter-wavelengths. However, at even multiples of quarter-wavelengths the resistive component is high, while at odd multiples of quarter-wavelengths, the resistance is low or medium. The reactive component of the load of an antenna whose length is between an odd multiple and an even multiple of quarter-wavelengths is positive (inductive). An antenna whose length is between some even multiple of quarter-wavelength and the next odd multiple presents a negative (capacitive) reactance. These antenna characteristics are demonstrated by figure 2-118 which shows the impedance characteristics of a standard Navy 35-foot whip antenna.

It can now be seen that the function of the antenna tuning equipment is to make the antenna length together with the tuning component appear as some odd multiple of quarter-wavelength for any frequency within the 0.3- to 26-mc tuning range. Radio Frequency Tuner TN-229/SRT contains the main tuning component, an adjustable length of transmission line. The Antenna Coupler CU-372/SRT contains loading components to extend the range of the r-f tuner. The manual controls for the tuning adjustments are located in the Control Indicator C-1352/SRT, which is a part of Transmitter Group OA-684/SRT and is covered in paragraph 2q.

b. RADIO FREQUENCY TUNER TN-229/SRT (R-F TUNER).—Radio Frequency Tuner TN-229/SRT (r-f tuner) contains the main tuning coil with an adjustable sliding short, which is the primary tuning element, and an impedance transformer, together with a switch to cut the transformer in or out, depending on the tuning requirement. The r-f tuner also contains a blower, B-302, for cooling purposes, the operation of which is covered in paragraph 2q(1). A blower switch, S-308, and a thermostat, S-305, are included as protective devices for operation at the 500-watt level (see paragraph 10e(1)).

(1) MAIN TUNING COIL.—R-f output to the antenna coupler loading components is connected to the main tuning coil, L-302 (figure 2-119), through the

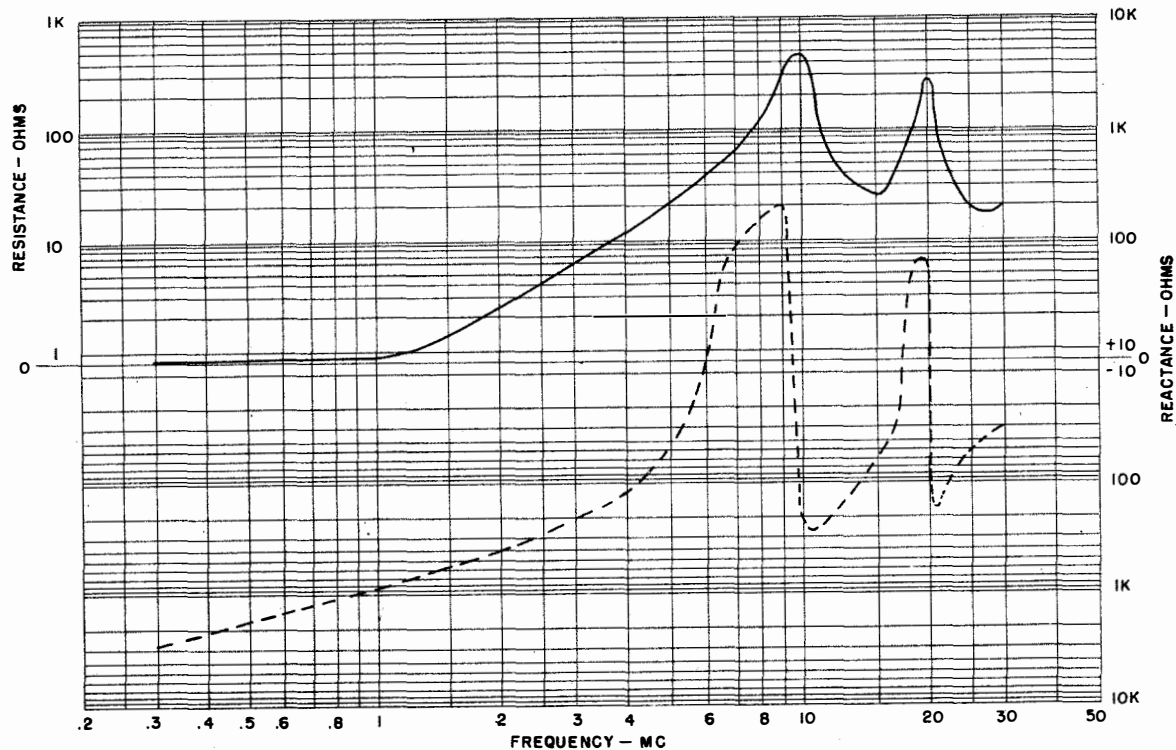


Figure 2-118. Impedance Characteristics, Typical 35-Foot Whip Antenna

bypass switch in the antenna coupler (see paragraph 17c(1)). L-302 is a section of helical center conductor transmission line whose length is made adjustable by means of a sliding short. The sliding short is adjusted so that the effective length of the main coil, together with the effective antenna length, is an odd multiple of quarter-wavelength for the frequency, which is the point of resonance (zero reactance). Highest efficiency usually corresponds to the lowest odd multiple, which means employing the shortest length of nonradiating variable line in the circuit. Drive motor B-301 positions the sliding short along the main coil. The manual control for regulating the position is contained in the control-indicator and is discussed in paragraph 2q(1). The transmission line is coupled to the main coil by a single loop coupling coil, L-301, which is mounted on the shorting ring.

(2) IMPEDANCE TRANSFORMER.—The length and configuration of the single loop coupling coil, L-301, has been designed for optimum coupling above 1 mc. The characteristic of the 35-foot whip antenna (figure 2-118) shows that the resistive component of the antenna impedance is so low at a frequency of 1 mc or lower that a step-up transformer will be required after the antenna is resonated to bring the SWR to within the allowable limit.

Rf from the load adjusting unit, via the antenna coupler (see paragraph 17c(1)), is connected first to transformer switch S-308 (figure 2-120), which will either connect a 9:1 impedance transformer, Z-301, in the transmission line through its contacts 1, 2 and 3, 4

or, in its other setting, will bypass the action of Z-301, through contacts 2, 4, at the same time shorting out the impedance transformer. Magnerotor actuator B-303 positions transformer switch S-308 under control of the positioning cam and the manual control in the control-indicator, as described in paragraph 2q(4). The output from contact 4 of S-305 is fed to the coupling coil, L-301.

(3) R-F TUNER MECHANICAL DRIVE.—To position the shorting ring on the main tuning coil, the drive motor, B-301 (figure 2-121), is energized. Its output of rotary motion is transmitted through a coupling to an extending shaft having fixed to it a helical gear, O-323. A mating helical gear, O-308, permits the right-angle transfer to a shaft to the magnetic clutch, O-301. Rotary motion is further transmitted through the friction plates of the clutch, O-301, to an output shaft that has worm O-304 fixed to it. The mating worm gear transfers rotary motion to the main drive shaft with a 100-to-1 reduction ratio. Driving gears O-340 and O-341, on either end of the main drive shaft, transfer the rotary motion, through idler gears O-338 and O-339, to the parallel racks, O-321 and O-322. Rotary motion has now been changed to the required rectilinear motion for the positioning of the shorting ring that is mounted on the end of the racks. Also mounted on the main drive shaft is a worm, O-342, that is mated to a worm gear, O-344. This worm gear, in turn, drives the shaft of position potentiometer R-301 whose function is described in paragraph 2q(5).

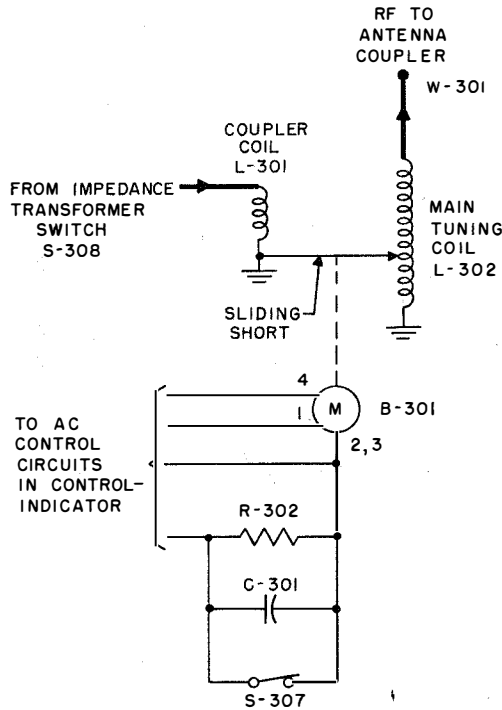


Figure 2-119. Main Tuning Coil L-302, Simplified Schematic

Operational requirements demand accurate control of the positioning of the shorting ring. To achieve this, the magnetic clutch, O-301 (figure 2-122), is inserted in the drive to limit the inertia effects. Under normal driving conditions, rotary action is transferred from the clutch input shaft to the clutch output shaft by virtue of having the driven clutch plate in contact with the driving clutch plate under pressure from spring O-302. At the time positioning of the shorting ring is to be stopped, the drive motor is de-energizing and, concurrently, the brake coil, L-303, in the clutch is energized. The magnetic field of the brake coil attracts the driven clutch plate against the stationary housing of the brake coil. The magnetic field opposes the spring action. This causes braking of the output shaft at the same time as it disengages from the driving clutch plate and the input shaft. In this manner the low-velocity members are quickly stopped, leaving the high-velocity members to coast without affecting the positioning of the shorting ring. The braking time of the clutch is a function of the air gap existing between the back surface of the driven clutch plate and the front surface of the brake coil housing. This gap is adjusted by having the lower housing screwed into the upper housing to give the required gap. Locking screw holes are so placed in the lower and upper housings to permit adjustments in increments of 0.002 inch.

c. ANTENNA COUPLER CU-372/SRT (ANTENNA COUPLER).—Antenna Coupler CU-372/SRT (antenna coupler) contains a switch that enables complete bypassing of the antenna tuning equipment in the transmission line under certain operating situations, a

set of loading reactive components to extend the range of tuning accomplished by the main tuning coil in the r-f tuner, together with a switch to select the desired component and set of grounding cams used to prevent surges in the transmitter during periods of switching. Also incorporated in the antenna coupler is a junction box that contains a set of connectors from which are used all the cross-connecting of control leads between the r-f tuner and the antenna coupler and between each of these units and the transmitter group. The usage of these cross-connections is described in paragraph 17d on antenna tuning equipment control circuits.

(1) ANTENNA BYPASS SWITCH S-3512.—At certain frequencies, the actual antenna impedance is such that no tuning is required to meet the SWR reading of 2:1 required at the r-f output of the radio frequency amplifier. Also, it is sometimes desired to have the antenna and transmission line connected directly to a receiver (see paragraph 7g). To meet these conditions, antenna bypass switch S-3512 (figure 2-123) is introduced into the r-f transmission line.

When it is desired to have the tuning elements in the line, S-3512 is in the "tuner-in" position. The r-f line from the load adjusting unit enters the antenna coupler through connector J-3506, through contacts 4 and 3 of S-3512, and then out through connector J-3505 to the r-f tuner input. The output of the r-f tuner is permanently interconnected to the loading switch, S-3511 (see paragraph 17c(2)). The output from S-3511 is connected to contact 2 of bypass switch S-3512. In the "tuner in" position, the r-f transmission line is complete through contacts 2 and 1 of S-3512, through length of RG-19/U first extrusion cable W-3501 to external standoff E-3523, from whence it is interconnected to the antenna lead-in.

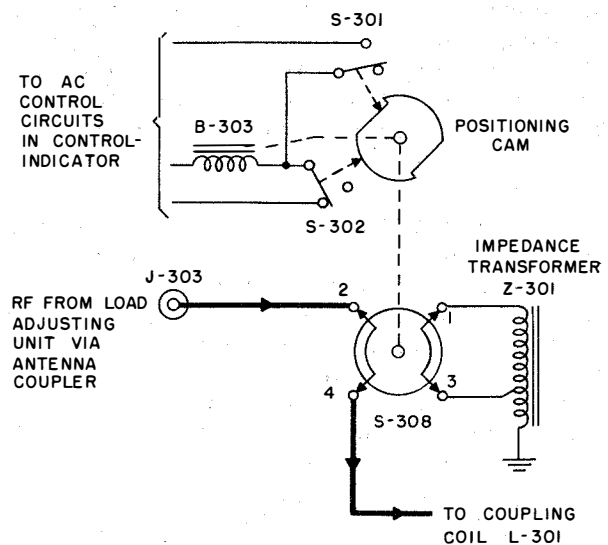


Figure 2-120. Impedance Transformer Z-301, Simplified Schematic

With the antenna bypass switch, S-3512, placed in the "bypass" position, the r-f output from the load adjusting unit is connected directly to the antenna, through J-3506, contacts 4 and 1 of S-3512, W-3501, and E-3523.

Magnetic actuator B-3502 positions S-3512 in either the "tuner-in" or "bypass" under control of the positioning cam and the manual control in the control-indicator, as described in paragraph 2q(2).

(2) **LOADING SWITCH S-3511.**—At the low frequencies, a series inductor must be added to the transmission line to increase the effective length of the line, since the total length of the main tuning coil is insufficient to achieve resonance. At frequencies where the effective antenna length is an even multiple of wavelengths (antiresonance) and the resistive impedance is high, a capacitor can be added in series with the line where in the "direct" position a poorer match would be obtained, since the antenna impedance is approaching the characteristic impedance of the variable line. At frequencies where the effective electrical length of the antenna is slightly longer than a quarter-wavelength, a length of tuning coil equal to a little less than a half-wavelength would have to be added to resonate. Here a series capacitor may be added to shift the reactive component of the effective antenna impedance from inductive to capacitive, permitting tuning near the top of the main tuning coil for increased efficiency. In the case of longer "L"-type antennas, the frequency at which first resonance occurs is lower. This requires a greater length of main coil to provide the balance of the extra half-wavelength and may result in no reliable tuning point for a small range of frequencies without the use of capacitance. In some cases the series plus shunt capacitor or the shunt capacitor alone may be used effectively.

If one of the loading components is required to tune for the reasons noted above, the required component is switched into the transmission line through the two-section loading switch, S-3511 (figure 2-124). If no loading component is required, the r-f transmission line is switched through the two sections of S-3511. The output of the r-f tuner is interconnected to contact 1 of S-3511A and contact 1 of S-3511B through the RG-19/U first extrusion cable, W-3502. If no loading component is required, S-3511 is in the "direct" position and the output of the tuner is connected from S-3511A contact 1, through the connecting link between sections A and B, through S-3511B contact 2, and then to contact 2 of the antenna bypass switch, S-3512, and then to the antenna (see paragraph 17c(1)). If the series capacitor, C-3501, is desired in the line, S-3511 is placed in the "A" position. The output of the r-f tuner is now connected through S-3511B contacts 1 and 5 to one side of C-3501; the other side of C-3501 is connected to S-3511B contact 3, and through the connecting link between sections B and A to contact 2 of S-3511A, and then to S-3512 contact 2. S-3511 has six positions, one

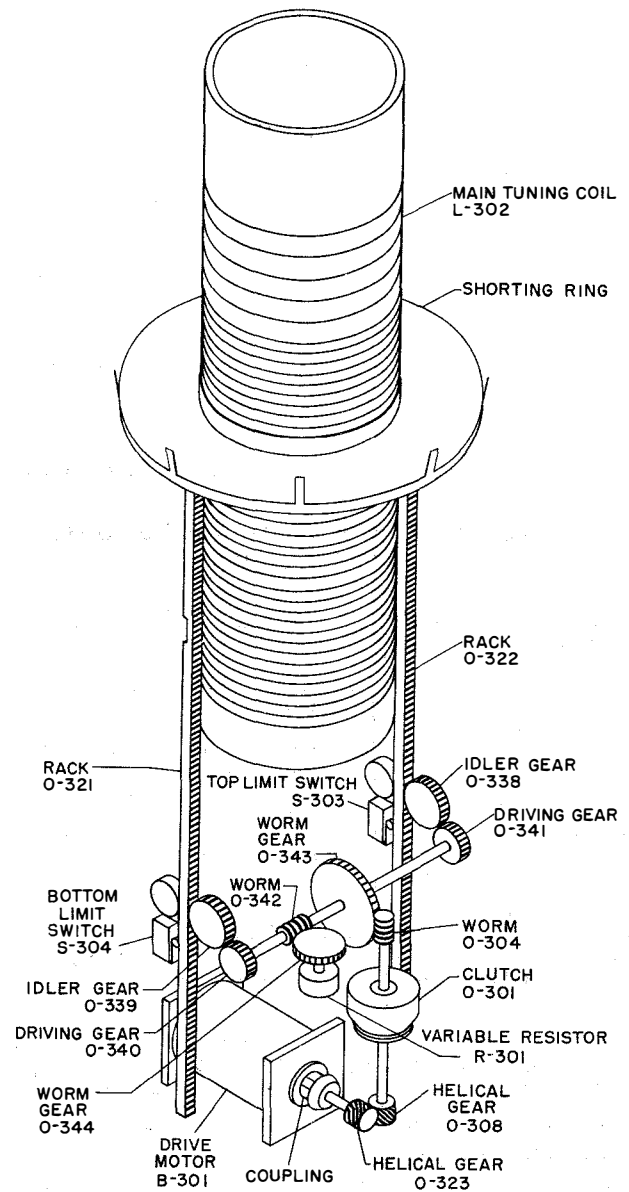


Figure 2-121. R-F Tuner Mechanical Drive

for direct connection and five for different combinations of loading components. Positioning S-3511 to the desired position is accomplished by magnetorotor actuator B-3501 under control of the two positioning cams as covered by paragraph 2q(3). Table 2-23 shows the tuning component employed for each position of the loading switch, S-3511.

(3) **GROUNDING CAMS.**—As described in paragraph 17c(1), the bypass switch, S-3512, is inserted in the transmission line. At the times S-3512 is switching from "tuner-in" to "bypass" or vice versa, the transmission line is momentarily opened, removing the antenna load. At these times the output of the radio frequency amplifier must be cut off to prevent surges in the output caused by the momentary removal of antenna load.

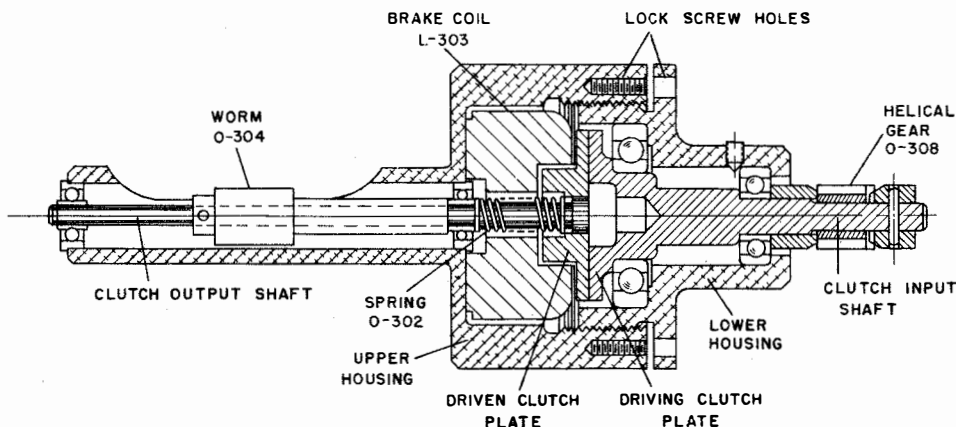


Figure 2-122. Magnetic Clutch O-301, Cross Section

TABLE 2-23. FUNCTION OF LOADING SWITCH S-3511

| POSITION OF S-3511* | LOADING COMPONENT USED |
|---------------------|--|
| DIRECT | None |
| A | C-3501 in series |
| B | C-3501 in series, C-3502, C-3503 shunted across line |
| C | L-3502 in series |
| D | L-3501 in series |
| E | C-3502, C-3503, shunted across line |

* Positions of S-3511 correspond to same positions of ANTENNA COUPLER LOADING (A) switch S-404 on control-indicator.

Fixed to the shaft of the bypass switch, S-3512, are grounding cams A and B (figure 2-125) which, together with the microswitches S-3507 and S-3510, remove a ground during the instances switching takes place. This ground signal is interconnected to the IPA stage in the radio frequency amplifier (RFA). The absence of the ground will cause the IPA to be cut off, which will cut off the output of the transmitter (see paragraph 10c(1)).

Grounding cam A is of such a configuration that it will cause contacts C and NO of its associated microswitch, S-3507, to be closed only when the bypass switch, S-3512, is completely homed in either the "bypass" or "tuner-in" positions. Grounding cam B is formed so that it will close the C and NO contacts of its associated microswitch, S-3510, to be closed only when bypass switch S-3512 is in the "tuner-in" position. With the "tuner in" condition, ground is forwarded through contacts C and NO of S-3510 and through C and NO of S-3507 and interconnected to the IPA stage in the RFA, making it possible to transmit carrier. During the switching from "tuner-in" to "bypass", contacts C and NO of S-3507 are opened, removing the ground to the RFA to cut off the carrier. When the bypass switch reaches the "bypass" position, contacts C and NO of

S-3507 again close, but contacts C and NO of S-3510 are now opened because of the action of cam B. If the transmitter is to be operated with the tuning equipment bypassed, an auxiliary ground will be forwarded through contacts of relay K-401 in the control-indicator (see paragraph 2g(2)), through contacts C and NO of S-3507, to the RFA to energize the carrier. However, if it is desired to operate with the automatic bypassing of the tuning equipment between periods of transmission, as explained in paragraphs 7g and 2g(2), the ground from K-401 in the control-indicator will not be present. At the end of a transmission, the bypass switch, S-3512, is automatically driven to the bypass position by the action of the ATU bypass transfer circuit in the low level radio modulator and the ANTENNA TRANSFER switch (A), S-402, in the control-indicator in the REMOTE position. While in bypass, in this mode of operation, the IPA stage in the RFA is cut off, as there will be no ground caused by contacts C and NO of S-3510 being open and no auxiliary ground from K-401. At the beginning of the next transmission, the ATU bypass transfer circuit signals the return of the bypass switch S-3512 to the "tuner-in" position. The carrier cannot go on until the bypass switch has reached the tuner-in position, as the ground required to remove the cutoff potential from the IPA stage is not forwarded until both grounding cams A and B have returned to the "tuner-in" position, closing the C and NO contacts of both S-3507 and S-3510. This prevents a premature surge of r-f energy before the proper antenna load is replaced on the transmitter output.

d. ANTENNA TUNING EQUIPMENT CONTROL CIRCUIT SUMMARY.—The control of the tuning functions accomplished in the antenna coupler and r-f tuner is from the control-indicator, which is a component of Transmitter Group OA-684/SRT. These functions have been described in detail in paragraphs 2g and 17c(1), (2), and (3) and are now being summarized to show continuity of connections. Figure 2-128 is a simplified schematic of the control circuitry in the antenna coupler and r-f tuner and must be used in con-

junction with the control-indicator control circuits shown on figure 2-126. With the exception of the control of -24 volts dc in two instances, and one ground control, antenna tuning equipment control circuits are concerned with the control of 110-volt, 60-cycle, single-phase, a-c power used to operate the two magnerotor actuators in the antenna coupler and one magnerotor actuator, together with the drive and blower motors, in the r-f tuner. In addition to the control functions in the following summary, the r-f tuner contains a thermostatic switch, S-305, and a blower switch, S-306, employed in the 500-watt operate circuit of the transmitter, as described in paragraph 10e(1) and 16c(8) (g).

(1) ANTENNA TRANSFER CONTROL.—Placing the ANTENNA TRANSFER switch (Ⓐ), S-402, in the control-indicator in the TUNER IN position (figure 2-126) connects “-24 V after time delay” through contacts 3 and 2 of S-402 and then connects it to the antenna coupler through P-402 and J-2919 pin 12, through J-2916 and J-606 pin 4, over wire 145 to E-605 terminal 66, then by interconnecting cable to the antenna coupler junction box (figure 2-128), through P-3301 and J-3502 pin M, through P-3501 and J-3507 pin P, into the antenna coupler to terminal 4 on TB-3501, to winding of K-3501. The winding of K-3501 is completed to ground through terminal 1 of TB-3501, through J-3507 and P-3501 pin F, to J-3502 and P-3301 pin N, over the interconnecting cabling to the ground potential found at E-606 terminal 74, which will energize K-3501. Energized K-3501 connects one side of a 110-volt a-c line, which is taken from the uninterrupted oven heater supply in the transmitter, through contacts 1 and 3 of K-3501, through NO and C contacts of S-3509 to one side of magnerotor actuator B-3502 winding. The other side of the a-c line is connected directly to the other side of the winding of B-3502, which energizes B-3502. This circuit is maintained until B-3502 drives the positioning cam to the point where the actuator of S-3509 falls into the notch, which opens the NO and C controls of S-3509, de-energizing B-3502, stopping at the point corresponding to the “tuner-in” position of the antenna transfer switch.

Placing the ANTENNA TRANSFER switch (Ⓐ), S-402, in the BYPASS position, which is the “center-off” position, disrupts the -24 volts dc from the line to K-3501 which de-energizes K-3501. The a-c supply to B-3502 is now connected through contacts 1 and 4 of de-energized K-3501, through the NO and C contacts of S-3508. B-3502 operates again until the actuator of S-3508 falls into the notch of the position cam which corresponds to the “bypass” position of the antenna transfer switch.

With the ANTENNA TRANSFER switch (Ⓐ), S-402, placed in the REMOTE position, the line to K-3501 is connected through contacts 2 and 1 of S-402 (figure 2-126), through P-402 and J-2919 pin 14, through J-2916 and J-606 pin 12, over wire 144 to E-605 terminal 65, over wire 240 to E-603 terminal 40, over wire 238 through J-605 and J-1103 pin 10, through

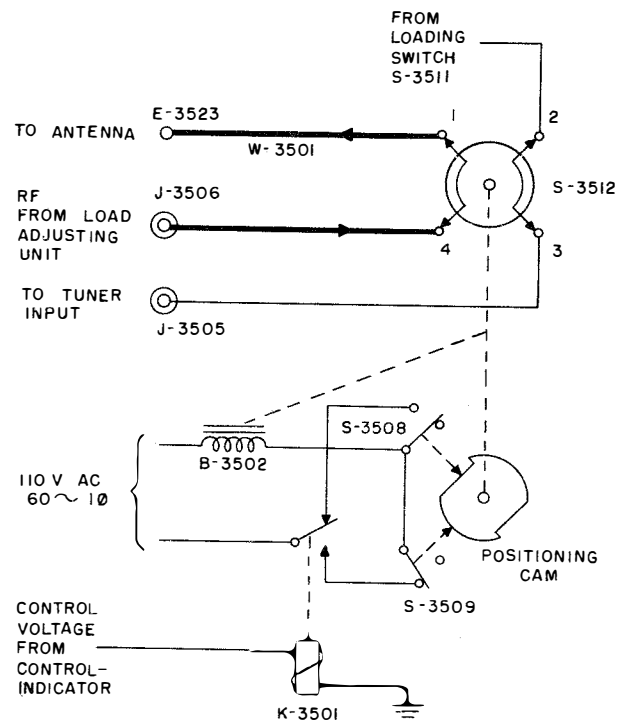


Figure 2-123. Antenna Bypass Switch S-3512, Simplified Schematic

J-1109 and J-1111 pin 4, to the ATU bypass transfer circuit. When K-1102 is energized, “-24 V after standby” is placed on the line through contacts 4 and 3 of K-1102, which will position the antenna transfer switch in the “tuner-in” position. When K-1102 is not operated, the “-24 V after standby” is removed from the line, and the antenna transfer switch is driven to the “bypass” position.

(2) ANTENNA LOADING CONTROL. — The 110-volt, 60-cycle, single-phase, a-c line, which is energized in the transmitter after the START button of the MAIN POWER switch (Ⓜ), S-3004 in the low voltage power supply, has been depressed, is connected from E-605 terminals 63 and 64 through the interconnecting cabling to the antenna coupler junction box (figure 2-128) through P-3301 and J-3502 pins V and U. One side of the line, from J-3502 pin V, is connected to J-3501 pin V and then through P-3501 and J-3507 pin K to one side of the antenna loading magnerotor actuator, B-3501. The other side of the line, from J-3502 pin U, is connected to J-3501 pin U and then through J-3504 and P-3302 pin G, back over the interconnecting cabling to E-606 terminal 82 (figure 2-126) over wire 158, through J-607 and J-2917 pin 15, through J-2920 and P-401 pin 16 to the arm (contact 11) of ANTENNA COUPLER LOADING switch (Ⓐ) S-404. S-404 can be set to one of six positions (DIRECT, A, B, C, D or E). For the DIRECT position, the a-c line is connected through contacts 11 and 13 of S-404, through P-402 and J-2919 pin 1, through J-2918 and J-608 pin 6, over wire 192 to E-604 terminal 55,

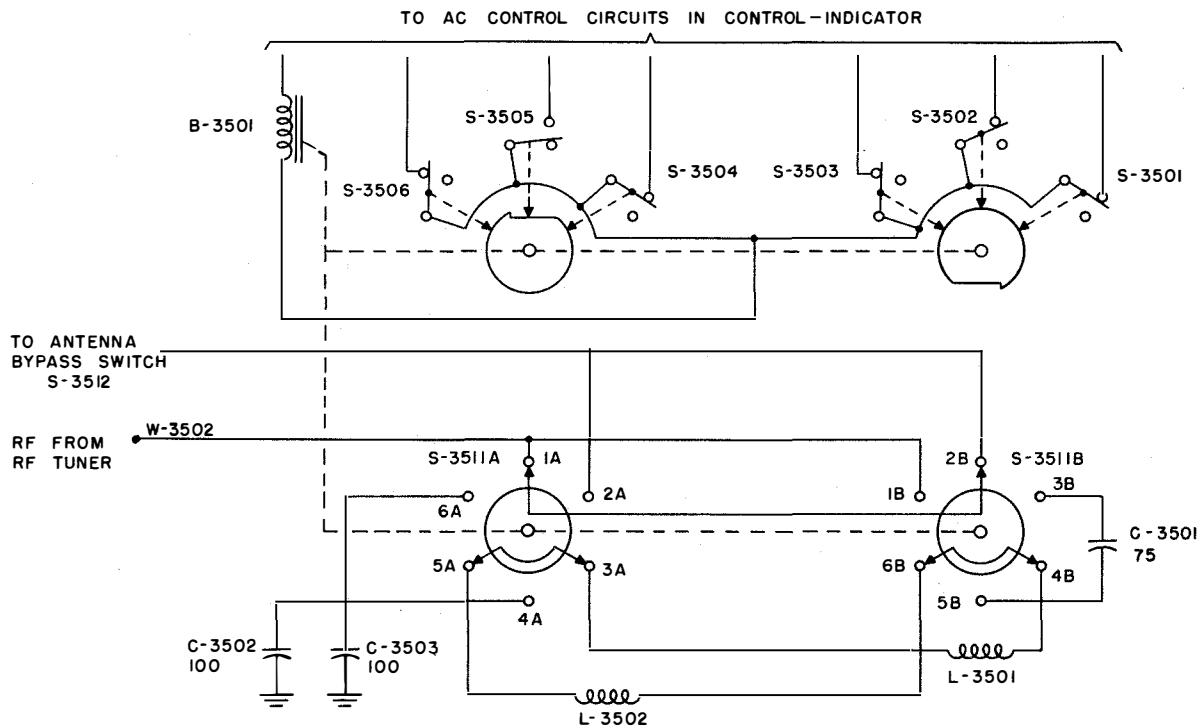


Figure 2-124. Loading Switch S-3511, Simplified Schematic

through the interconnecting cabling to the antenna coupler junction box (figure 2-128), through P-3302 and J-3504 pin A, through P-3501 and J-3507 pin G, through contacts NO and C of S-3505, to the other side of actuator B-3501. This energizes B-3501 and it drives the positioning cam and loading switch until the actuator of S-3505 falls in the notch of the cam, opening contacts NO and C of S-3505, which opens the circuit to B-3501, stopping the loading switch at the "direct" position. Similar paths for actuating B-3501 can be followed when the ANTENNA COUPLER LOADING ⓐ switch, S-404, is in the other five positions.

(3) GROUNDING CAM CONTROL. — When the antenna transfer switch in the antenna coupler is in the "tuner-in" position, the same ground used to operate K-3501 is connected from TB-3501 terminal 1 to TB-3501 terminal 3, through contacts C and NO of S-3510 to terminal 5 of TB-3501, through J-3507 and P-3501 pin E, through J-3502 and P-3301 pin C, over interconnecting cabling to E-606 terminal 71, back through the interconnecting cabling, through P-3301 and J-3502 pin A, through P-3501 and J-3507 pin C to terminal 7 of TB-3501, through contacts NO and C of S-3507 to TB-3501 terminal 6, through J-3507 and P-3501 pin D, through J-3502 and P-3301 pin B, over interconnecting cabling to E-603 terminal 41 (figure 2-126) and then over wire 236, through J-602 and J-1302 pin 1 to the junction of R-1342 and R-1395 in the radio frequency amplifier. This is the ground required to permit the IPA stage to amplify. During switching of the antenna transfer switch, grounding

cam A (figure 2-128) opens the contacts NO and C of S-3507, breaking this ground. When the switch is in the "bypass" position, grounding cam B also breaks this ground by opening contacts NO and C of S-3510. When the ANTENNA TRANSFER ⓐ switch, S-402 in the control-indicator unit (figure 2-126), is in either the REMOTE or TUNER IN position, a ground to relay K-401 is completed through either contacts 5 and 4 or contacts 5 and 6 of S-402. As the other side of K-401 is connected to "-24 V after time delay", K-401 operates, opening its contacts 1 and 4. When S-402 is in the BYPASS position, ground is removed from K-401, and it ceases to operate, closing its contacts 1 and 4. In this condition, ground is connected through contacts 1 and 4 of K-401, through P-401 and J-2920 pin 3, through J-2917 and J-607 pin 6, over wire 150 to E-606 terminal 71. This ground now connects through S-3507 in the antenna coupler back to the junction of R-1342 and R-1395 in the radio frequency amplifier through the same connections previously described.

(4) TRANSFORMER CONTROL.—The 110-volt, a-c line available at J-3501 pins V and U of the antenna coupler junction box is also used for the control of the impedance transformer switch in the r-f tuner. One side of the line, from J-3501 and P-3304 pin V, is connected through the interconnecting cabling through P-3306 and S-301 pin V of the r-f tuner, through terminal 12 of TB-301 and terminal 4 of TB-303, to one side of the impedance transformer switch magnetorotor actuator, B-303. The other side of the a-c line from J-3501 pin U is connected through J-3504 and P-3302

pin 4, over the interconnecting cabling to the transmitter group, through E-604 terminal 49 (figure 2-126), over wire 186, through J-608 and J-2918 pin 13, through J-2920 and P-401 pin 14, to the arm (contact 11) of TRANSFORMER switch (AG) S-403. S-403 has two active positions (DIRECT and 1). For the DIRECT position, the a-c line is connected through contacts 11 and 13 of S-403, through P-401 and J-2920 pin 10, through J-2918 and J-608 pin 10, over wire 189 to E-604 terminal 52, through the interconnecting cabling to the antenna coupler junction box (figure 2-128), through P-3302 and J-3504 pin M, through J-3503 and P-3303 pin M, over the interconnecting cabling to P-3305 and J-302 pin M in the r-f tuner, through terminal 11 on TB-301 and terminal 3 of TB-303, through contacts NO and C of S-301, to the other side of actuator B-303. This energizes B-303, and it drives the positioning cam and the impedance transformer switch until the actuator of S-301 falls into the notch of the cam, opening contacts NO and C of S-301, which opens the circuit to B-303, stopping the impedance transformer switch at the "direct" position. A similar path for actuating B-303 can be followed when the TRANSFORMER switch (AG), S-403, is in the other position (1).

(5) DRIVE MOTOR CONTROL.—The 110-volt, single-phase, 60-cycle a-c filament supply found in the radio frequency oscillator is connected to P-401 pins 7 and 15 on the control-indicator (figure 2-126). This ultimately is the same a-c supply as found in the antenna coupler junction box at J-3501 pins V and U, with the side of the line found at J-3501 pin V corresponding to the side of the line found at P-401 pin 7. The side of the a-c line at P-401 pin 7 also is fed through fuse F-2917, located in the radio frequency oscillator. This line is connected through the normally closed contacts 3 and 1 of the SLOW switch (AH), S-407, through P-401 and J-2920 pin 2, through J-2918 and J-608 pin 2, over wire 181 to E-604 terminal 44, over the interconnecting cabling, to the antenna coupler junction box (figure 2-128), through P-3301 and J-3502 pin W, through P-3501 and P-3304 pin W, over the interconnecting cabling to the r-f tuner, through P-3306 and J-301 pin W, through terminal 11 of TB-302 to winding terminals 2 and 3 of drive motor B-301. The other side of the a-c line from P-401 pin 15 in the control-indicator (figure 2-126) is connected to contact 1 of the UP (AF) switch S-406 and to contact 4 of the DOWN (AG) switch S-405. Depressing the UP push button (AF) will connect the a-c line through contacts 1 and 2 of S-406, through P-401 and J-2920 pin 5, through J-2918 and J-608 pin 4, over wire 183 to E-604 terminal 46, over the interconnecting cabling to the antenna coupler junction box (figure 2-128), through P-3301 and J-3502 pin X, through P-3501 and J-3304 pin X, over the interconnecting cabling of the r-f tuner, through P-3306 and J-301 pin X, through terminal 10 of TB-302 to winding terminal 1 of drive motor B-301. This same side of the a-c line through contacts 1 and 2 of closed UP switch (AF) S-406 (figure 2-126) is also

connected through phase-shifting capacitor C-402, through P-401 and J-2920 pin 4, through J-2918 and J-608 pin 3, over wire 182 to E-604 terminal 45, over the interconnecting cabling to the antenna coupler junction box (figure 2-128), through P-3301 and J-3502 pin Y, through J-3501 and P-3304 pin Y, over the interconnecting cabling to the r-f tuner, through P-3306 and J-301 pin Y, through terminal 9 of TB-302 to winding terminal 4 of B-301. These connections will energize B-301 so that it drives the shorting ring up along the main tuning coil. If the DOWN push button (AG) is depressed instead of the UP push button (AF), similar paths to winding terminals 3 and 4 of B-301 can be traced through contacts 4 and 5 of S-405.

If the SLOW switch (AH), S-407, is depressed, the side of the a-c line, which is usually connected through contacts 3 and 1 of S-407 to winding terminals 1 and 2 of E-301, as previously described, is opened. Ac is now supplied by alternate connections to B-301. The side of the a-c line found at the J-3501 pin V is the same as that previously connected through the SLOW switch (AH), S-407. This line is connected through P-3304 and the interconnecting cabling to the r-f tuner, through P-3306 and J-301 pin V to terminal 12 of TB-302. From this point there are two branches; one branch connects the line from terminal 12 of TB-302 through terminal 4 of TB-303, through the closed contacts of centrifugal switch S-307 to the winding terminals 1 and 2 of B-301. The other branch from TB-302 terminal connects to the parallel combination of C-301 and R-302, which, in turn, are connected through terminal 11 of TB-301 to winding terminals 1 and 2 of B-301. With the SLOW push button (AH) depressed, together with either the UP (AF) or the DOWN (AG) push button, B-301 will be energized through connections described, until rotational speed sufficient to open the contacts of the centrifugal switch, S-307, is reached, at which point the R-302, C-301 network is added in series with the winding, preventing B-301 from attaining a speed higher than that set by the action of S-307.

(6) MAGNETIC CLUTCH CONTROL.—The "—24 volts after time delay" is connected through the normally closed contacts 6 and 4 of the UP switch (AF), S-406 (figure 2-126), through the normally closed contacts 3 and 1 of the DOWN switch (AG), S-405, through dropping resistor R-402, through P-401 and J-2920 pin 8, through J-2917 and J-607 pin 13, over wire 185 to E-604 terminal 48, through the interconnecting cabling to the antenna coupler junction box (figure 2-128), through P-3301 and J-3502 pin O, through J-3501 and P-3304 pin O, through the interconnecting cabling to the r-f tuner, through P-3306 and J-301 pin O, through terminal 7 to TB-302 to one side of the winding of magnetic clutch coil L-303. The other side of the coil is connected to ground through terminal 8 of TB-302, through J-301 and P-3306 pin N, over the interconnecting cabling to the antenna coupler junction box, through P-3304 and J-3501 pin N through J-3502 and P-3301 pin N, over the interconnecting cabling to the transmit-

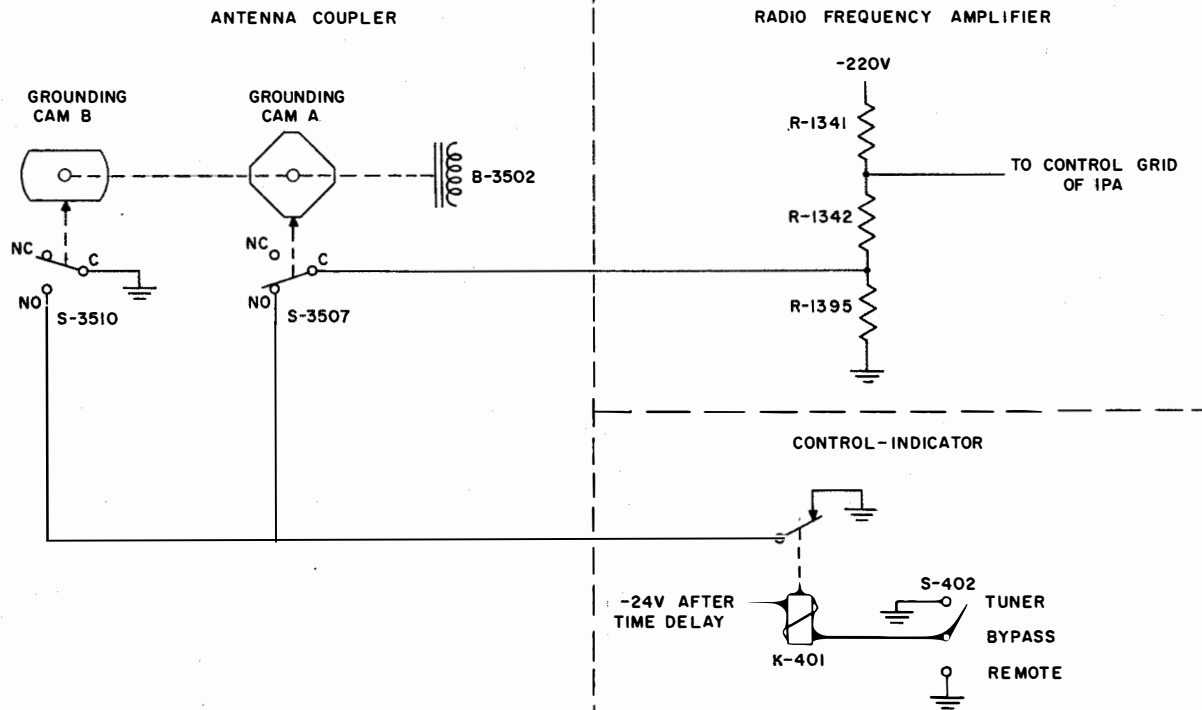


Figure 2-125. Grounding Cam Circuit, Simplified Schematic

ter group, to the ground potential found at terminal 74 of E-606. This energizes L-303, which mechanically disconnects the drive shaft of drive motor B-301 from the load (shorting ring). If the UP push button (A) on the control-indicator (figure 2-126) is depressed, the one side of the magnetic clutch coil, L-303, is disconnected from the "-24 volts after time delay" and instead is connected through contacts 4 and 5 of S-406, through P-401 and J-2920 pin 6, through J-3918 and J-608 pin 5, over wire 184 to E-604 terminal 47, over the interconnecting cabling to the antenna coupler junction box (figure 2-128), through P-3301 and J-3502 pin D, through J-3501 and P-3304 pin D, over interconnecting cabling to the r-f tuner, through P-3306 and J-3501 pin D, through terminal 2 of TB-301 to the NO contact of top limit switch S-303. If the top limit of travel of the shorting ring has not been reached, the circuit is open at this point, and the magnetic clutch coil is not energized, which means that the clutch is mechanically energized, allowing the drive motor, B-301, to drive the shorting ring. When the top limit of travel is reached, contacts NO and C of S-303 close, and the circuit to the clutch coil continues through the contacts, through contacts NO and C of the bottom limit switch S-304, through terminal 1 of TB-302, through J-301 and P-3306 pin S, through the interconnecting cabling to the antenna coupler junction box, through P-3303 and J-3501 pin S, through J-3502 and P-3301 pin S, and through the interconnecting cabling to a "-24 volts after time delay" found at terminal 87 of E-609. Therefore, at the time the top limit is reached, L-303 will be re-energized to disconnect the load from

the drive to prevent jamming. Control of energizing coil L-303 through the action of the bottom limit switch S-304 when the DOWN push button (B) is depressed can be followed in a similar manner.

(7) BLOWER MOTOR CONTROL.—The 110-volt a-c line found at J-3501 pins V and U in the antenna coupler junction box, which is energized when the START push button on the transmitter group is depressed, is used to energize the r-f tuner blower motor, B-302. One side of the line is connected through J-3501 and P-3304 pin V, through the interconnecting cabling to the r-f tuner, through P-3306 and J-301 pin V, through terminal 12 of TB-301, to winding terminals 1 and 2 of B-302. The other side of the line is connected through J-3501 and P-3304 pin U, through the interconnecting cabling to the r-f tuner, through P-3306 and J-301 pin U, through terminal 13 of TB-301 to winding terminal 2 of B-302. The side of the a-c line found at P-401 pin 15 on the control-indicator (figure 2-126) is the same side of the line as that at J-3501 pin U. This is connected through phase-shifting capacitor C-401, through P-401 and J-2920 pin 1, through J-2918 and J-608 pin 1, over wire 180 to E-604 terminal 43, through the interconnecting cabling, to the antenna coupler junction box (figure 2-128), through P-3301 and J-3502 pin T, through J-3501 and P-3304 pin T, through the interconnecting cabling to the r-f tuner, through P-3306 and J-301 pin T, through terminal 14 of TB-301 to winding terminal 4 of B-302. This completes the energizing circuit for the blower motor, B-302, as soon as the START push button on the transmitter group is depressed.

- NOTES:
1. IN AN/SRT-16, THE HEATERS IN THE TWO MOUNTINGS ARE INDIVIDUALLY ENERGIZED FROM THE CABINET HEATER SWITCH (H) IN EACH TRANSMITTER GROUP. IN AN/SRT-15 THE HEATERS IN THE TWO MOUNTINGS ARE IN PARALLEL.
 2. RESISTANCE VALUES EXPRESSED IN OHMS UNLESS OTHERWISE INDICATED.
 3. SEE ANTENNA COUPLER AND RADIO FREQUENCY TUNER CONTROL CIRCUITS FOR INTERCONNECTING DATA BETWEEN TRANSMITTER GROUP AND ANTENNA COUPLER.
 4. COLOR CODE-- R-RED, Y-YELLOW, GR-GREEN, BU-BLUE.
5. (C) DENOTES INTERCONNECTING CABLING, FOR DETAILS SEE INTERCONNECTING CABLING DIAGRAMS IN SECTION 3 OF INSTRUCTION BOOK.
 6. OTHER CONNECTIONS IN 500 W STACK ARE THE SAME AS 100 W STACK.
 7. IN AN/SRT-14, JUMPERS ARE PLACED BETWEEN E606(76) AND E606(77) AND BETWEEN E608(1) AND E608(2).

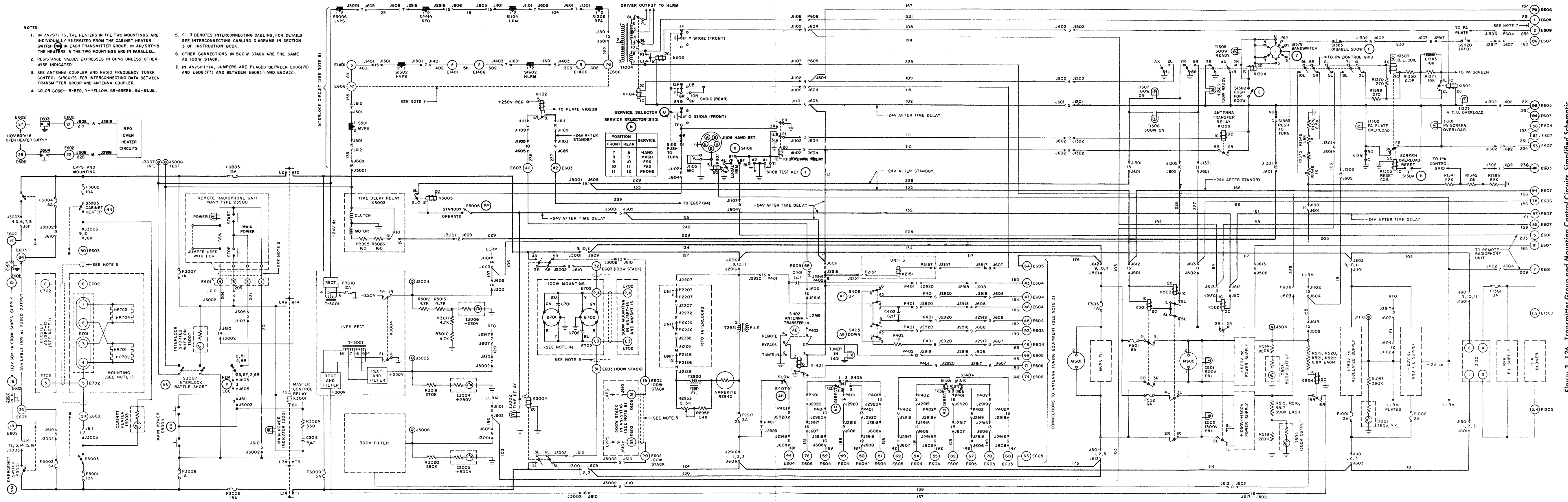
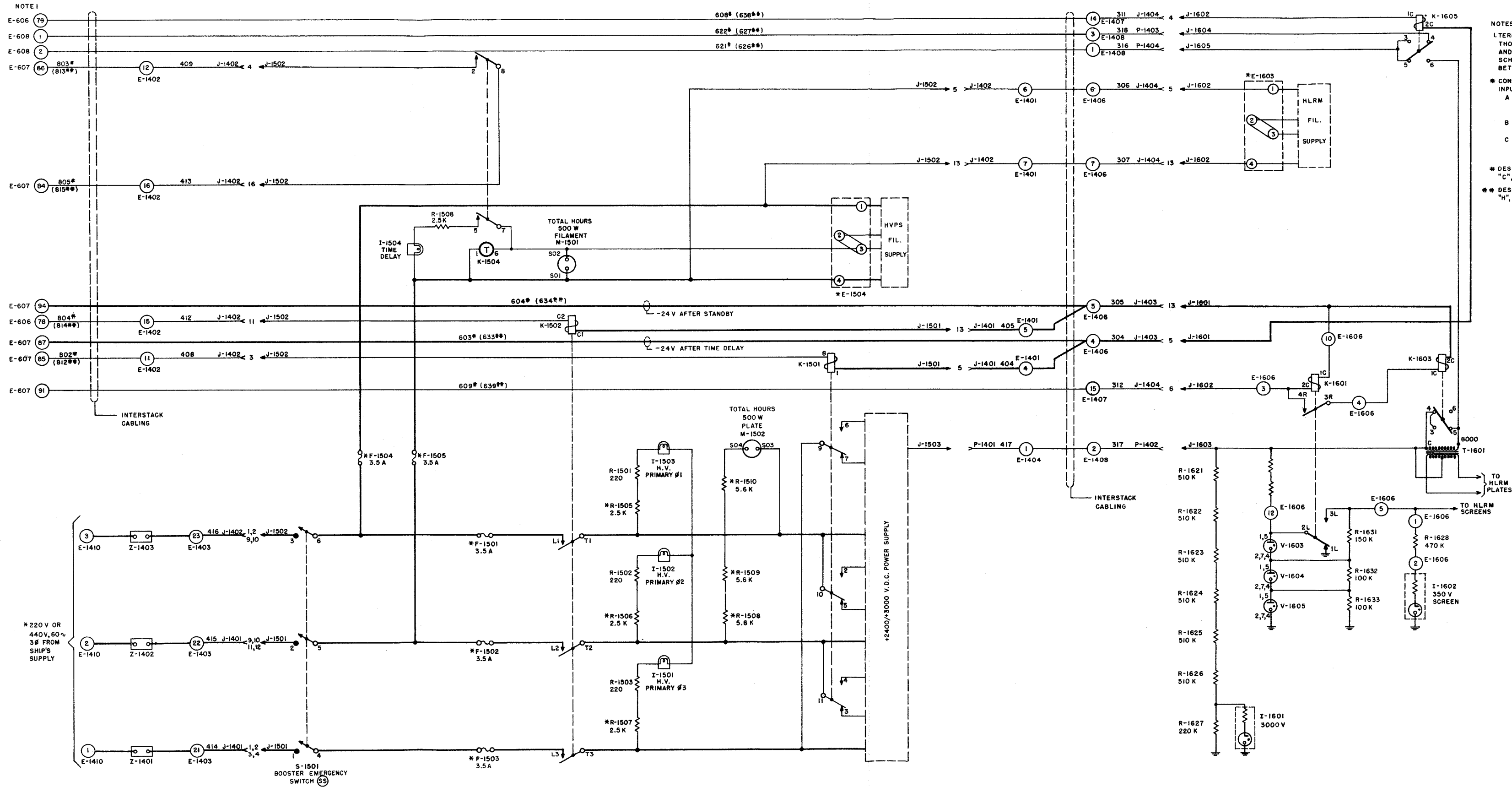


Figure 2-126. Transmitter Group and Mounting Control Circuits, Simplified Schematic



NOTE 1

NOTE 2

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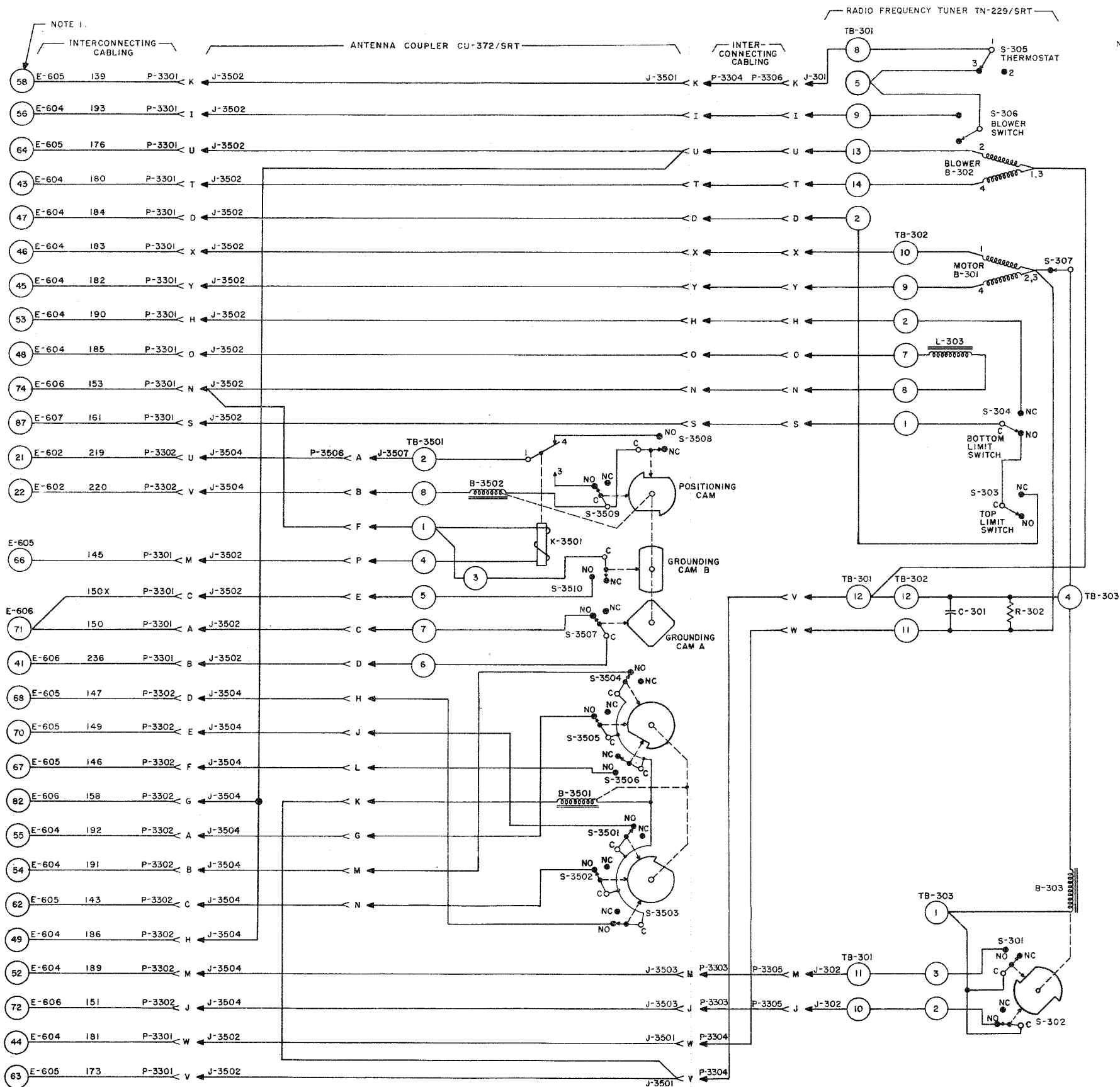
NOTE 99

NOTE 100

Figure 2-127. Booster Control Circuits, Simplified Schematic

THEORY OF OPERATION

NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A

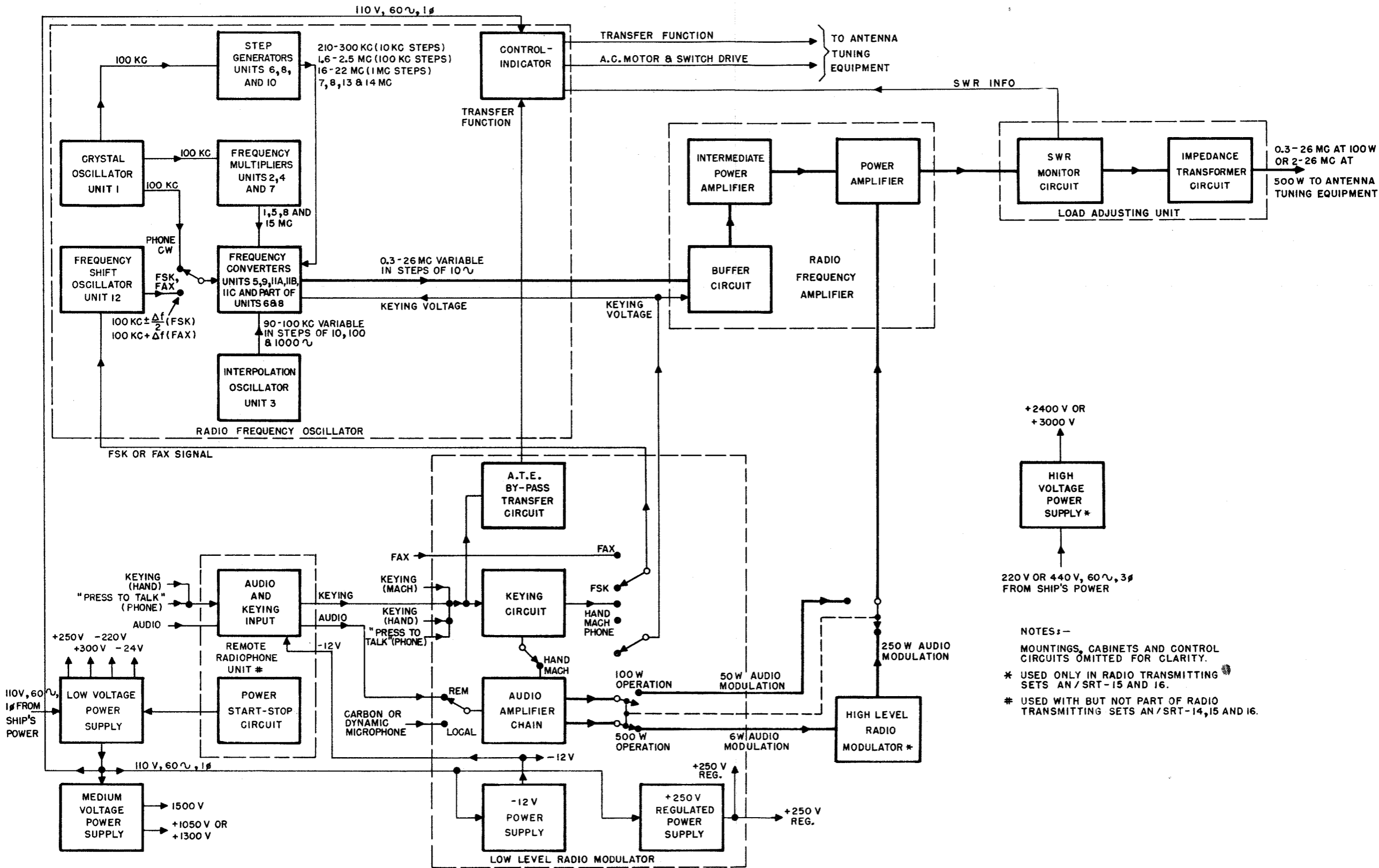


NOTES:—
1. TERMINALS AT LEFT EDGE OF SHEET ARE DUPLICATE OF THOSE FOUND ON THE TRANSMITTER GROUP AND MOUNTING CONTROL CIRCUITS SIMPLIFIED SCHEMATIC (FIGURE 2-126). TO TRACE ANY CIRCUIT MATCH TERMINAL NUMBERS ON EACH DRAWING.

ORIGINAL

2-129/2-130

Figure 2-128. Antenna Coupler and R-F Tuner Control Circuits, Simplified Schematic



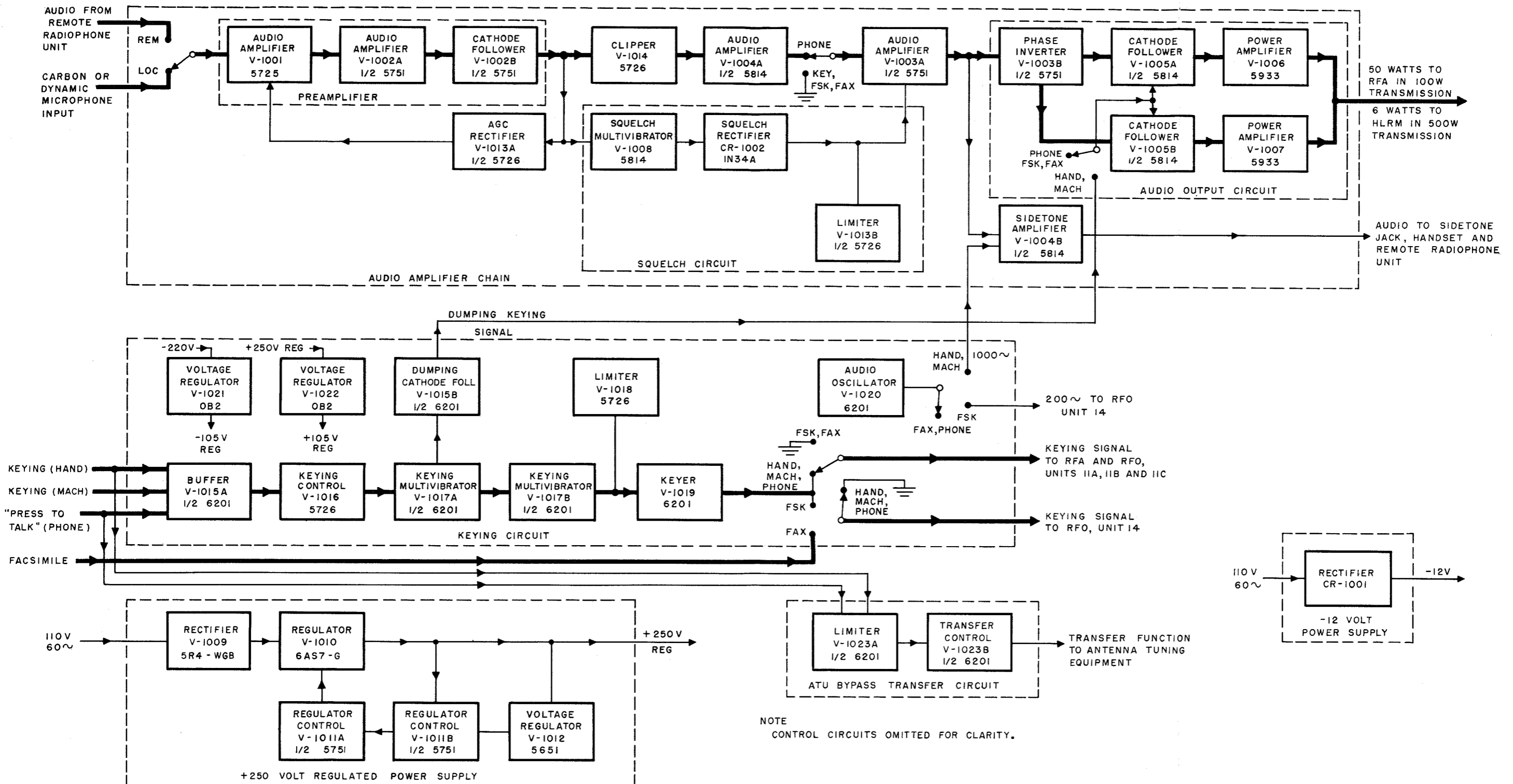
+2400 V OR
+3000 V

HIGH VOLTAGE POWER SUPPLY *

220 V OR 440 V, 60 \sim , 3 ϕ
FROM SHIP'S POWER

NOTES:-
MOUNTINGS, CABINETS AND CONTROL CIRCUITS OMITTED FOR CLARITY.
* USED ONLY IN RADIO TRANSMITTING SETS AN/SRT-15 AND 16.
* USED WITH BUT NOT PART OF RADIO TRANSMITTING SETS AN/SRT-14, 15 AND 16.

Figure 2-129. Transmitter Bay, Radio Transmitter Set AN/SRT-15, Simplified Block Diagram



NOTE
CONTROL CIRCUITS OMITTED FOR CLARITY.

Figure 2-130. Radio Modulator, MD-229/SRT (Low Level Radio Modulator, LIRM) Functional Block Diagram

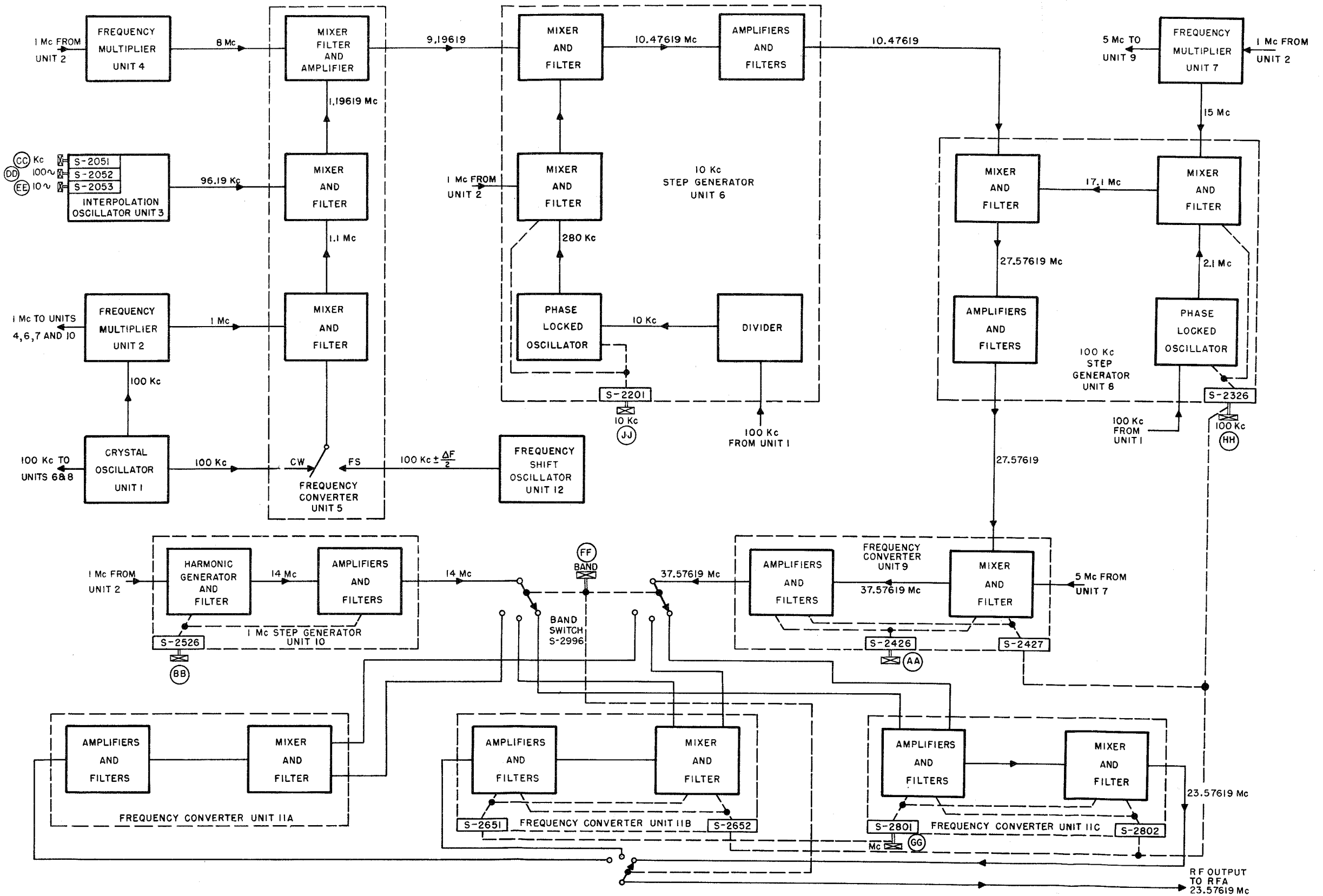


Figure 2-131. RFO Producing 23.57619 Mc, Functional Block Diagram

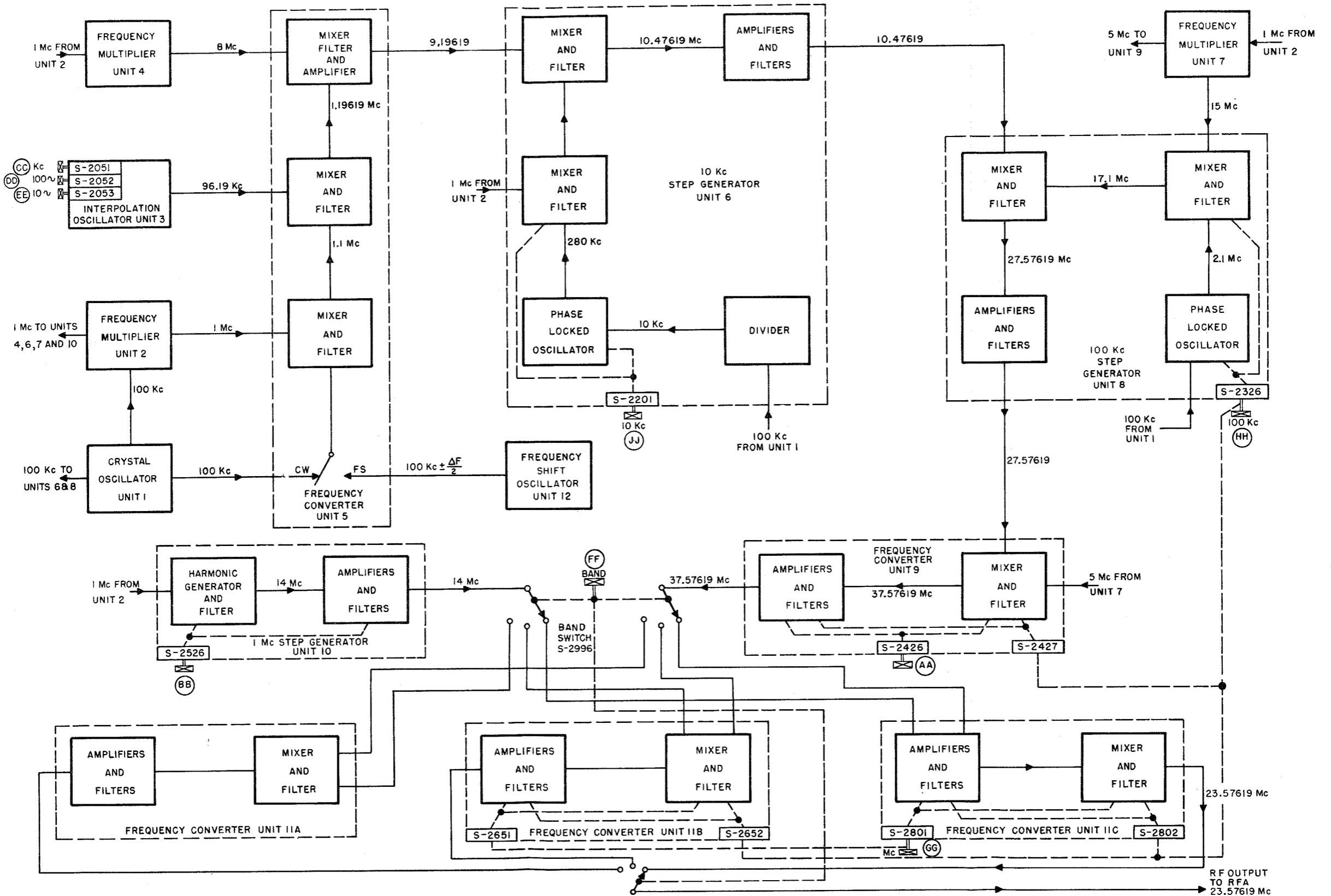


Figure 2-131. RFO Producing 23.57619 Mc, Functional Block Diagram

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NAVSHIPS 92121(A)

INSTRUCTION BOOK

for

RADIO TRANSMITTING SETS

AN/SRT-14, AN/SRT-14A, AN/SRT-15,
AN/SRT-15A, AN/SRT-16 AND AN/SRT-16A

SECTION 3
INSTALLATION

FEDERAL TELEPHONE AND RADIO COMPANY

A division of INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

CLIFTON, NEW JERSEY

DEPARTMENT OF THE NAVY
BUREAU OF SHIPS

★
Contract: NObsr-52021
NObsr-52622

Approved by BuShips: 26 October 1955

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SECTION 3 INSTALLATION

1. INTRODUCTION.

This section contains a discussion of the method of installing and making preliminary tests for Radio Transmitting Sets AN/SRT-14, AN/SRT-15 and AN/SRT-16. The major components included are listed in table 3-1. The Navy-supplied radiophone unit is considered as a separate entity for the purposes of this discussion. The components composing each equipment are illustrated in the simplified pictorial views, figures 3-1, 3-2, and 3-3. Each equipment is shown on an interconnected system basis in figures 3-20, 3-21, and 3-22.

Note

The AN/SRT-14A, 15A and 16A are non-magnetic versions of the AN/SRT-14, 15 and 16 respectively. As the nonmagnetic versions vary from the standard types only in the material used for cabinet panels, all information on the installation of the AN/SRT-14, 15 and 16, as set forth in the following section, applies equally as well for the AN/SRT-14A, 15A and 16A.

Note

Where, throughout this section, reference is made to either low level radio modulator or high level radio modulator, it should not be interpreted as meaning the technique of modulation known as grid modulation or low level modulation, but rather as referring to the operating *power* level.

In this section, the term *stack* is used to describe all the components of the transmitter bay that are supported by a single mounting. Thus the AN/SRT-14 transmitter

bay is composed of a single stack and a transmitter coupler, which is a component of the Transmitter Group OA-684. The standard AN/SRT-15 transmitter bay comprises a "transmitter stack", a "booster stack", and one transmitter coupler. The AN/SRT-16 comprises two similar stacks, usually identified as "100 watt stack" and "500 watt stack," plus two transmitter couplers.

The assembly procedure has been divided into paragraphs according to the type of work required rather than the unit being installed. Thus instructions for the mechanical assembly of all units are found in paragraph 4, wiring in 5. Within these paragraphs, the material has been arranged by units to permit installation personnel to complete the installation of each unit separately if desirable.

In paragraph 4, Mechanical Assembly, one complete set of instructions is given for the transmitter bay of each set. Wherever two or more arrangements of the transmitter bay are possible, the recommended method is described. Other methods of assembly are considered as variations of the recommended method.

After the equipment is assembled and wired, the main test cable should be assembled and wired in accordance with the instructions given in paragraph 6.

Paragraph 7 sets forth the checks and initial adjustments together with the operation procedures for the first trial operation of the equipment.

2. UNPACKING PROCEDURES.

The complete Radio Transmitting Set AN/SRT-14 is shipped in 11 boxes, an AN/SRT-15 in 17 boxes, and AN/SRT-16 in 24 boxes. The components constituting each set and the number of boxes required for each set are shown in table 3-2.

TABLE 3-1. UNITS COMPRISING AN/SRT-14, 15 AND 16

| UNIT | AN/SRT-14 | AN/SRT-15 | AN/SRT-16 |
|---|-----------|-----------|-----------|
| TRANSMITTER BAY: | 1 | 1 | 1 |
| Mounting MT-1423/SRT | 1 | 2 | 2 |
| Transmitter Group OA-684/SRT | 1 | 1 | 2 |
| Radio Modulator — Power Supply OA-685/SRT | — | 1 | 1 |
| Cover (Booster) CW-341/SRT | — | 1 | — |
| ANTENNA TUNING EQUIPMENT: | | | |
| Antenna Coupler CU-372/SRT | 1 | 1 | 2 |
| Radio Frequency Tuner TN-229/SRT | 1 | 1 | 2 |
| REMOTE UNITS: | | | |
| Remote Radiophone Unit (Not supplied with equipment. Quantity may vary with individual installation.) | | | |

TABLE 3-2. SHIPPING DATA

| BOX | ENCLOSURES | NUMBER OF BOXES SUPPLIED | | | REFER TO FIG. NO. |
|-------------------------------|---|--------------------------|-----------|-----------|-------------------|
| | | AN/SRT-14 | AN/SRT-15 | AN/SRT-16 | |
| A | Transmitter Group OA-684/SRT (less Transmitter Coupler CU-402/SRT, Control-Indicator C-1352/SRT and Electron Tube 4-400A) | 1 | 1 | 2 | 3-4 |
| B | Transmitter Coupler CU-402/SRT, Control-Indicator C-1352/SRT, and Electron Tube 4-400A) | 1 | 1 | 2 | 3-5 |
| C | Mounting MT-1423/SRT | 1 | 2 | 2 | 3-6 |
| D | Antenna Coupler CU-372/SRT | 1 | 1 | 2 | 3-7 |
| E | Radio Frequency Tuner TN-229/SRT | 1 | 1 | 2 | 3-8 |
| F | Radio Modulator-Power Supply OA-685/SRT (less two Electron Tubes 4-125A) | — | 1 | 2 | 3-9 |
| G | Electron Tube 4-125A (2) | — | 1 | 1 | — |
| H | Installation Material for AN/SRT-14 MK-230/SRT-14 (lot 1), Instruction Books (2) | 1 | — | — | — |
| I | Installation Material for AN/SRT-14 | 1 | — | — | — |
| J | Installation Material for AN-SRT/15 MK-232/SRT-15 (lot 1), incl Cover CW-341/SRT | — | 1 | — | — |
| K | Installation Material for AN-SRT/15 MK-232/SRT-15 (lot 2), Instruction Books (2) | — | 1 | — | — |
| L | Installation Material for AN/SRT-16 MK-234/SRT-16 (lot 1) | — | — | 1 | — |
| M | Installation Material for AN/SRT-16 MK-234/SRT-16 (lot 2), Instruction Books (2) | — | — | 1 | — |
| N | Equipment Spares for Transmitter Group OA-684/SRT | 1 | 1 | 2 | — |
| O | Equipment Spares for Mounting MT-1423/SRT | 1 | 2 | 2 | — |
| P | Equipment Spares for Antenna Coupler CU-372/SRT | 1 | 1 | 2 | — |
| Q | Equipment Spares for Radio Frequency Tuner TN-229/SRT | 1 | 1 | 2 | — |
| R | Equipment Spares for Radio Modulator-Power Supply OA-685/SRT (less spare transformer T-1502) | — | 1 | 1 | — |
| S | Equipment Spare Transformer (T-1502) | — | 1 | 1 | — |
| Total number of boxes per set | | 11 | 17 | 24 | |

Boxes N through S are cartons containing the various sets of equipment spares and need not be opened for purposes of installing the equipment. Boxes A, C through F have outer wooden cases and disassembly is outlined in figures 3-4, 3-6 through 3-9 respectively. Box B is a consolidating carton for the three components packed therein, which are packed in individual cartons as shown in figure 3-5. Box G is a small carton for packaging the two 4-125A electron tubes that are used

in the Radio Modulator MD-230/SRT of AN/SRT-15 or 16.

The installation material for each AN/SRT-14, 15 or 16 (MK-230/SRT-14, MK-232/SRT-15 or MK-234/SRT-16 respectively) is packed in two cartons together with two copies of the instruction book. Table 3-3 shows the breakdown of the installation material in accordance with the box in which they are packed. A display of the installation material for an AN/SRT-15 is shown in figure 3-10.

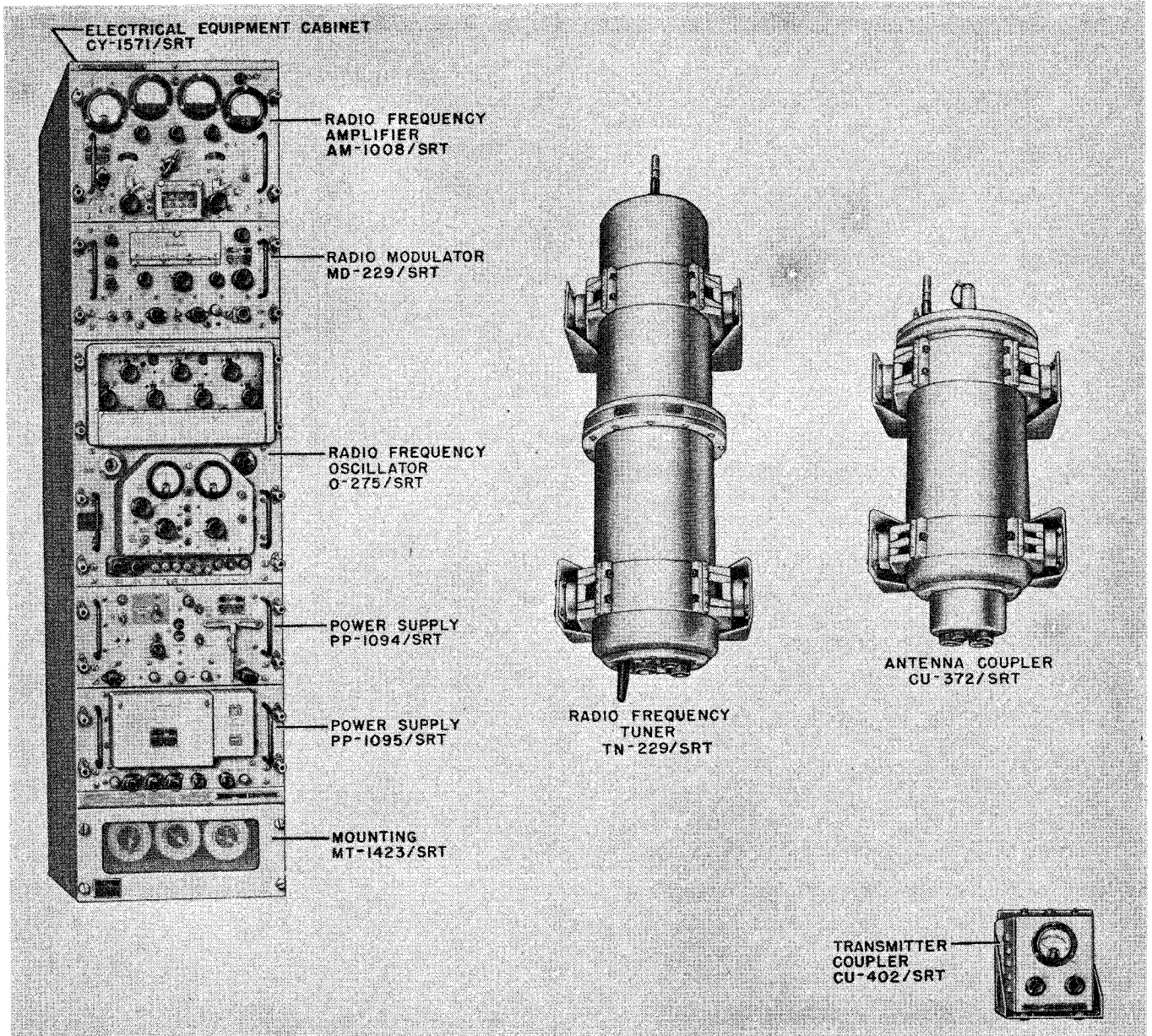


Figure 3-1. Simplified Pictorial View, Radio Transmitting Set AN/SRT-14

TABLE 3-3. INSTALLATION MATERIAL

| ITEM | QUANTITY SUPPLIED | | | | |
|--|-------------------|-----------|-------|-----------|-------|
| | AN/SRT-14 | AN/SRT-15 | | AN/SRT-16 | |
| | Box H | Box J | Box K | Box L | Box M |
| Shock Mount, Barry No. C-4300-T10 | 4 | 4 | — | 8 | — |
| Shock Mount, Barry No. C-4125-T10 | — | 4 | — | — | — |
| 5/8-11 x 1 in. lg screw, cap, hex hd, stl st, type 304 | 4 | 8 | — | — | 8 |
| 5/8 nom x 0.203 in. w x 0.156 in. thk (med) washer, spring lock, stl st, type 302 | 4 | — | 8 | 8 | — |
| 1/2-13 x 1 in. lg screw, cap, hex hd, stl st, type 304 | 8 | 24 | — | — | 36 |
| 1/2 nom x 0.171 in. w x 0.125 in. thk (med) washer, spring lock, stl st, type 302 | 8 | — | 24 | 36 | — |
| 5/16-18 NC-2 x 1-1/4, in. lg screw, cap, hex hd, stl st, type 304 | — | — | 6 | 14 | — |
| 5/16 nom x 0.125 in. w x 0.078 in. thk (med) washer, spring lock, stl st, type 302 | — | — | 6 | 14 | — |
| 5/16-18 NC-2 nut, hex, stl st, type 303 | — | — | 6 | 14 | — |
| 10-32 nut, hex, stl st, type 303 | — | — | 6 | — | — |
| No. 10 (0.019 nom) x 0.062 in. w x 0.047 in. (med) washer, spring lock, stl st, type 302 | — | — | 6 | — | — |
| Eyebolt; 1/2-13 thd. | 4 | 4 | — | — | 8 |
| Leveling Insert; Federal Telecommunication Lab. No. NL-982598-1 | 10 | — | 14 | 24 | — |
| Plug Button; United-Carr No. 51117 | 12 | — | 18 | 28 | — |
| Model Nameplate | 1 | — | 1 | 1 | — |
| Transmitter Bay Interstack Cables, AN/SRT-14 | 1 set | — | — | — | — |
| Transmitter Bay Interstack Cables, AN/SRT-15 | — | — | 1 set | — | — |
| Transmitter Bay Interstack Cables, AN/SRT-16 | — | — | — | — | 1 set |
| Cable Assembly; Federal Telecommunication Lab. No. NL-901214-2 | 1 | 1 | — | 2 | — |
| Connector, Plug; Bendix Scintilla No. 10-64632-8S | 2 | — | 2 | 4 | — |
| Connector, Plug; Bendix Scintilla No. 10-64632-8P | 1 | — | 1 | 2 | — |
| Connector, Plug; Bendix Scintilla No. 10-64624-28S | 2 | — | 2 | 4 | — |
| Connector, Plug; Bendix Scintilla No. 10-64624-28P | 1 | — | 1 | 2 | — |
| Cable Accessory; Bendix Scintilla No. 10-35952-321 | 3 | — | 3 | 6 | — |
| Cable Accessory; Bendix Scintilla No. 10-35952-244 | 3 | — | 3 | 6 | — |
| Cap Assembly; Bendix Scintilla No. 10-35963-32 | 3 | — | 3 | 6 | — |
| Cap Assembly; Bendix Scintilla No. 10-35963-24 | 3 | — | 3 | 6 | — |
| Connector, Plug; type UG-154/U | 3 | — | 3 | 6 | — |
| Connector, Plug; type UG-167A/U | 1 | — | 1 | 2 | — |
| Connector, Plug; type UG-21B/U | 1 | — | 1 | 2 | — |
| Connector, Plug; type UG-23B/U | 1 | — | 1 | 2 | — |

TABLE 3-3. INSTALLATION MATERIAL (Cont'd)

| ITEM | QUANTITY SUPPLIED | | | | |
|---|-------------------|-----------|--------|-----------|--------|
| | AN/SRT-14 | AN/SRT-15 | | AN/SRT-16 | |
| | Box H | Box J | Box K | Box L | Box M |
| Sleeving, 1/2 in. lg, Bentley-Harris No. BH "649" No. 13 | 140 | — | 140 | 280 | — |
| Insulation Tape, Electrical; polyethylene, 1 in. wd, 30 ft lg roll | 2 | — | 2 | 4 | — |
| Ground Strap; 0.032 in. thk, 1/2 in. wd, 24 lg. | 2 | — | 2 | 4 | — |
| Main Test Cable Assembly* | 1 | — | 1 | — | 1 |
| Instruction Books | 2 sets | — | 2 sets | — | 2 sets |
| Cover CW-341/SRT | — | 1 | — | — | — |
| Sway Mount; Federal Telecommunication Lab No. NL-901559-12 | 2 | 2 | — | 4 | — |
| 3/8-16 NC-2 x 1 in. lg screw, cap, hex hd, stl st, type 304 | 8 | 8 | — | — | 16 |
| 3/8 nom x 0.141 in. w x 0.094 in. thk (med) washer, spring lock, stl st, type 302 | 8 | 8 | — | — | 16 |
| Leveling Insert; Federal Telecommunication Lab. No. NL-901561-1 | 2 | — | 4 | 4 | — |
| Plug Button; United-Carr No. 48199 | 12 | — | 18 | 28 | — |

*Not required to install equipment.

3. LOCATION OF EQUIPMENT.

a. TRANSMITTER BAY.

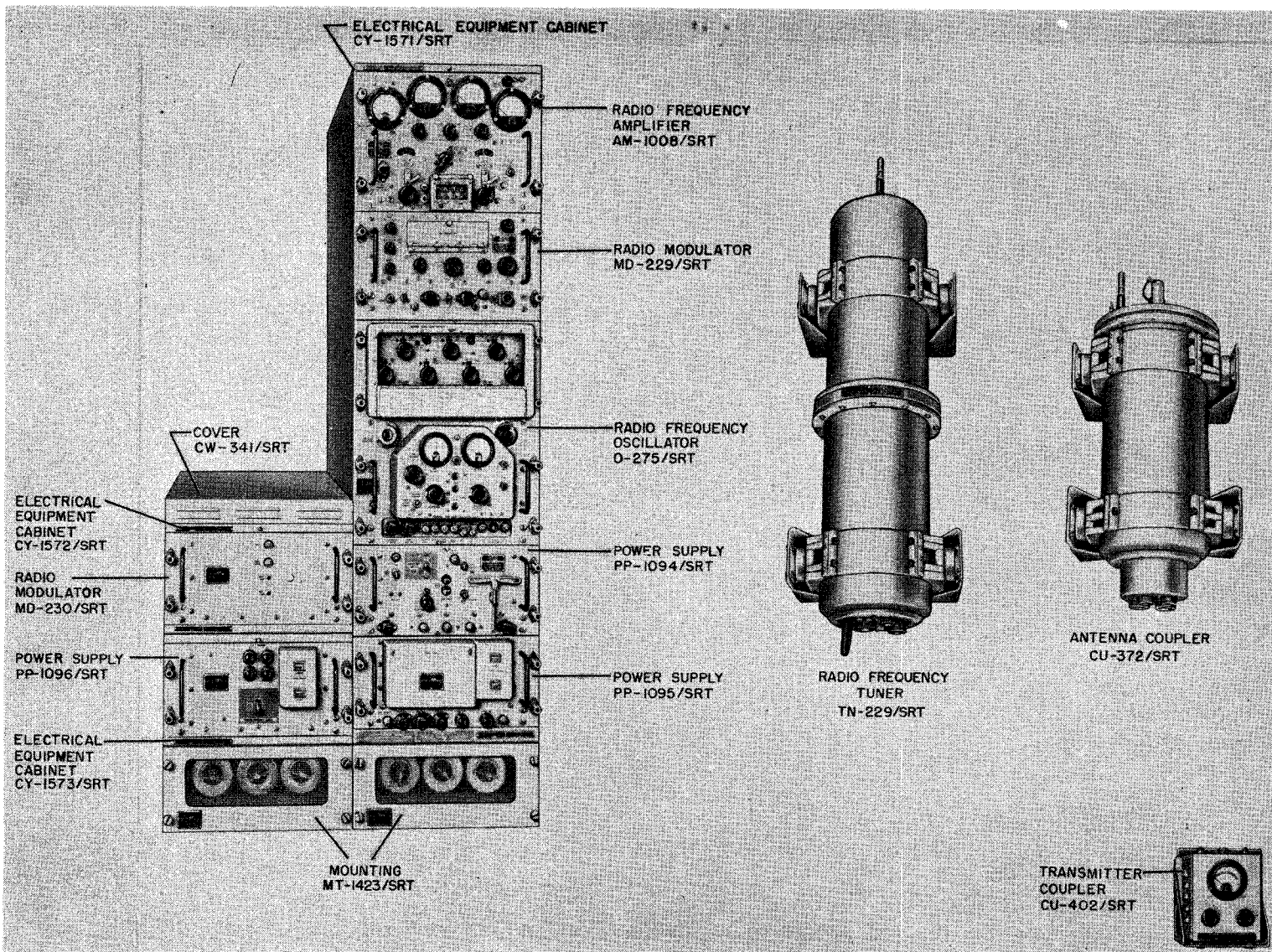
(1) CLEARANCE REQUIREMENTS.—For convenience in operation and maintenance, it is desirable to locate the transmitter bay in the main radio room if enough space is available. The ambient temperature at the installation site should be within a -20°C. (-4°F.) to +50°C. (+122°F.) range. The location chosen for the transmitter bay must provide top and side clearance for a 1/2-inch extrusion of the transmitter group on its shock mounts and adequate rear clearance for cable entry and ventilation. Additional room must be provided to permit removal and replacement of the individual drawers and to allow working space for maintenance personnel repairing the equipment. A minimum of 36 inches clearance in the front of the stack is required to permit the rear of a transmitter bay drawer and slide to clear the front of the cabinets. Since these drawers weigh from 75 to over 100 pounds each, additional clearance sufficient to provide working space for two men must be provided. If the area is too confined to permit one man to stand on each side of the open drawer, additional front clearance must be added to allow one man to work from the front of the open drawer while his partner works at one side. For specific recommendations, consult the outline drawing of the transmitter bay to be installed (figures 3-23, 3-24, 3-25).

(2) VARIATION IN TRANSMITTER BAY ARRANGEMENT.—The design of the AN/SRT-15 and AN/SRT-16 radio transmitting sets allows selection of any one of several transmitter bay arrangements. This

variety of arrangements permits installation personnel to take into consideration any obstruction or space restriction in the radio room and to select the transmitter bay arrangement that is most adaptable to their particular installation. The primary considerations in selecting any of these arrangements are the amount of space provided at the installation site and the amount of cabling necessary for the arrangement chosen. Illustrations of the various methods of assembly for the AN/SRT-14, 15 and 16 series appear in figure 3-11.

The AN/SRT-14 transmitter bay, consisting of a transmitter group and a single mounting, may be assembled only as shown in arrangement "C" of figure 3-11. However, there are a number of possible variations in the assembly of the AN/SRT-15 transmitter bay. The four main arrangements are shown in "A₁", "A₂", "B₁", and "B₂" of figure 3-11. Note that the two stacks of this set may be adjoining or separated by as much as a 10-foot cable run. The AN/SRT-15 transmitter bay may be assembled with either a portion of the booster between the transmitter group and its mounting or one booster component on top of the other, either adjoining or separated from the transmitter stack. In adjoining arrangements, the booster stack may be installed on either right or left side of the transmitter stack. In any of the illustrations shown, it is possible to interchange the position of the two booster components, provided the necessary changes in the interconnecting cable lengths are made.

Similarly, the AN/SRT-16 transmitter bay may be assembled with either the two stacks adjoining or a maximum separation of 10 feet of cable. In an AN/SRT-16, either transmitter group may be connected for 500-watt operation. To obtain best use of the prefabricated inter-



NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A

Figure 3-2. Simplified Pictorial View, Radio Transmitting Set AN/SRT-15

stack cables supplied with the equipment, the transmitter group mounted over the high level radio modulator should be designated the 500-watt stack, which corresponds to arrangement "D". Arrangement "E" is the same as "D", except that the stacks are separated a maximum of 10 feet. Arrangement "F" shows the booster components mounted adjoining the two transmitter stacks. In arrangements "D" and "E", the position of the 500-watt stack and the 100-watt stack may be transposed.

However, arrangements "A₁" for the AN/SRT-15 and "D" for the AN/SRT-16 are considered as the "standard" arrangements. When either of these two assemblies is used, the prefabricated cables supplied with the installation kit may be used for all connections between the two stacks. These cables should be run through the side cable entrances of the two adjoining mountings without the use of stuffing tubes. When any arrangement other than these two is chosen, the corresponding inter-stack cables must be fabricated by the installation personnel from standard Navy cable. The interconnecting cabling diagrams, figures 3-31 and 3-32, should be used as a guide.

When separated stack arrangements are employed for either the AN/SRT-15 or AN/SRT-16, 10 feet is considered to be the maximum separation between stacks. Greater separation can be used, but with a reduction of quality of transmission when the transmitter is in PHONE operation.

When the AN/SRT-15 transmitter assembly is installed with separated stacks as shown in arrangement A₂ of figure 3-11, two additional shock mounts are required for the rear of the booster stack. An installation such as that shown in arrangement "F", an alternate arrangement of the AN/SRT-16, requires one additional mounting, one booster cover, and four additional shock mounts in addition to the parts supplied for a standard arrangement "D" installation.

The Transmitter Coupler CU-402/SRT (load adjusting unit) should be mounted as close to the transmitter stack as possible. An ideal location of this unit is a mounting on the superstructure or some other suitably grounded member so that the controls of the transmitter coupler can be easily reached by an operator who is standing before the transmitter stack. The maximum distance between the transmitter stack and the transmitter coupler is set by the length of the two-conductor shielded cable, which is supplied with the installation material. This cable extends to a maximum of 12 feet from the cable entrance in the rear of the mounting at the base of the transmitter stack. Consult the outline drawing of the transmitter coupler (figure 3-27) for specific considerations.

b. ANTENNA TUNING EQUIPMENT.—The location of Antenna Coupler CU-372/SRT and Radio Frequency Tuner TN-229/SRT is primarily restricted by limitations of the lengths of the cables connecting these units with one another, with the antenna standoff termi-

TABLE 3-4. ANTENNA TUNING EQUIPMENT CRITICAL CABLE LENGTHS

| CABLE DESCRIPTION | CABLE TYPE | CRITICAL LENGTH |
|---|---------------------------|--|
| Transmitter bay to antenna coupler control cable. | MHFA-24 | 500 ft max. |
| Transmitter bay to antenna coupler control cable. | MSCA-19 | 500 ft max. |
| Transmitter coupler to antenna coupler r-f cable. | RG-18/U | 500 ft max. |
| Antenna coupler to r-f tuner r-f cable | RG-17/U 1st extrusion | Combined length of two cables should not exceed five feet. |
| Antenna coupler to antenna standoff terminal. | RG-17/U 1st extrusion. | |

nal or down-lead and with the transmitter group. Table 3-4 lists the maximum lengths for the critical cables. The most critical cable length is the combined length of the two sections of RG-17/U first extrusion. As these cables, in effect, are radiating members, every effort should be made to locate them as far as possible from any other radiating or reflecting body as well as keeping their total length to a minimum.

(1) ANTENNA COUPLER CU-372/SRT.—The mounting arrangements of the Antenna Coupler CU-372/SRT make it possible to mount this unit in either a horizontal or vertical plane. The principal restrictions in locating this unit are the critical cable lengths as outlined in table 3-4. As previously stated, the combined length of the two RG-17/U first extrusion cables should be kept to a minimum and should not exceed five feet. If this value should exceed five feet, the effective antenna length as seen by the antenna tuning equipment will be so increased as to make the calibrated tuning information inaccurate and, at certain frequencies, to make satisfactory tuning impossible. An increased length of these cables also reduces the radiated power from the antenna element.

In addition to cable lengths, certain clearances must be observed for the connection or removal of the interconnecting cables as shown on the antenna coupler outline drawing, figure 3-28. Finally, to facilitate checking and replacing the charge of dry nitrogen gas, with which this unit is pressurized, the charge valve and pressure gauge mounted at one end should be accessible and visible.

(2) RADIO FREQUENCY TUNER TN-229/SRT.—The same restrictions on location that apply for the antenna coupler, as described above, also hold for the Radio Frequency Tuner TN-229/SRT. The r-f tuner outline drawing, figure 3-29, shows the required clearances.

c. REMOTE RADIOPHONE UNIT.—The location of the remote radiophone unit with respect to the transmitter bay location is limited only to a 1,000-foot maximum length of interconnecting cabling between the transmitter bay and radiophone unit. The choice of location should be determined solely by convenience of operation. In many installations, the radiophone unit may connect to the transmitter bay through a patch panel rather than by a direct cable.

4. ASSEMBLY PROCEDURE.

a. TRANSMITTER BAY.—The installation personnel should select the transmitter bay arrangement that will suit the allotted space. If sufficient room is available, arrangement "A₁" for the AN/SRT-15 and arrangement "D" for the AN/SRT-16 will be found to be most practical. An assembly procedure for the standard arrangements shown in figure 3-11 follows. The hardware, shock mounts, and other installation materials are provided with the equipment.

(1) AN/SRT-14 ARRANGEMENT "C".— Using the AN/SRT-14 transmitter bay outline drawing (figure 3-23) as a guide, prepare level, accurately drilled foundations for the bottom and rear of the transmitter group. Secure all four shock mounts (item 3 on figure 3-23) to the foundation deck but do not tighten the bolts completely. Remove the expendable base blocks from the mounting. Set the mounting on its set of shock mounts and check the spacing of the shock mounts by threading a 5/8-11 x 1-inch long hex head cap screw (item 4 on figure 3-23) through the mounting floor into each shock mount. If the tapped hole in the shock mount lies directly below the matching hole in the mounting floor, the mounting may be removed and the shock mounts tightened in place on the foundation. If holes in mounting and shock mounts are not aligned, the foundation must be redrilled as required to correct spacing of shock mounts.

The rear of the mounting contains four cable entrances: a rectangular entrance of 24 square inches in the rear wall; a 15-square inch entrance in the mounting floor; a two-inch diameter entrance through the rear gusset on each side. The cables required for the transmitting bay are shown on the AN/SRT-14 Interconnecting Cabling Diagram (figure 3-30). In this arrangement, the rear and bottom cable entrances may be used for interconnecting cables having an external run. The cable entries in the side gussets of the mounting are not used in AN/SRT-14 installations.

Although the rear wall cable entrance is large enough to accommodate all the external cables in the majority of AN/SRT-14 installations, both rear and bottom cable entrances may be used if the number of cables entering the mounting is exceptionally large or if clearance to the rear cable entrance is restricted.

Locate the two capacitors, C-701 and C-702, in the rear of the mounting. To facilitate cable handling, these capacitors and their clamps should be removed from the mounting during installation. Loosen and remove the two outside screws on each clamp; do not

allow the screws or lock washers to fall into the mounting while this is being done. Disconnect each of the leads from each capacitor. The two capacitors and their clamps may then be removed and set aside to be replaced when the mounting assembly is completed.

Using the AN/SRT-14 Interconnecting Cabling Diagram (figure 3-30) as a guide, connect one end of the interstack cable "A" to the indicated terminals of E-702 in the mounting. Run the cable under the flange holding the terminal board and feed the cable through the cable clamp mounted on the center of the angle iron behind the terminal board. Tighten the clamp and feed the free end of the cable through the upper left cable slot.

Before making cuts in any of the rear or bottom entrance cover plates, plan on paper the number and diameter of the external cables using each entrance.

Note

An r-f output for a receiver terminated in a BNC connector (P-609) is made available inside the transmitter bay. If an external receiver is to be connected to this output, provision should be made in the stuffing tube plan for the incoming coaxial cable from the receiver. The cable assembly consisting of R-RT4 and P-3315, found in the installation material, should also be considered in the stuffing tube plan.

Either stuffing tubes or cable clamps may be used to secure individual external cables to the entry plates. If the former method is chosen, 45° or 90° tubes may be used where clearance is limited or obstructions restrict the cable approach. In such installations, cover plate calculations must be based on the clearance required to install the stuffing tubes rather than the outer diameter of cables. Remove one or both cable entry cover plates as required and put a hole of proper diameter for each cable passing through the plate. If stuffing tubes are to be used, they should be secured to the cover plates by brazing or welding. Refer to BUSHIPS drawing 9-S-3980-L for specific details of stuffing tube installation.

With the exception of the jackets on coaxial cables, remove armor and jackets from the internal runs of all cables entering the mounting. Only the individual insulated conductors should enter the mounting. Strip the last 42 inches of all external cables terminating in the transmitter group cabinet.

Set the mounting in its approximate position. If stuffing tubes are used, feed the external cables through the stuffing tubes on the cable entrance cover plate. If straight stuffing tubes are used, the cable armor and sheath must extend at least 1/8 of an inch beyond the inner edge of the stuffing tube. Where 45° or 90° tubes are used, the armor and jacket should extend a minimum of 1/8 inch beyond the stuffing tube gland. The RG-8/U cable, R-RA1, and the coaxial cable from the receiver, if such applies, should extend 10 inches beyond the stuffing tube. Pack each stuffing tube with standard

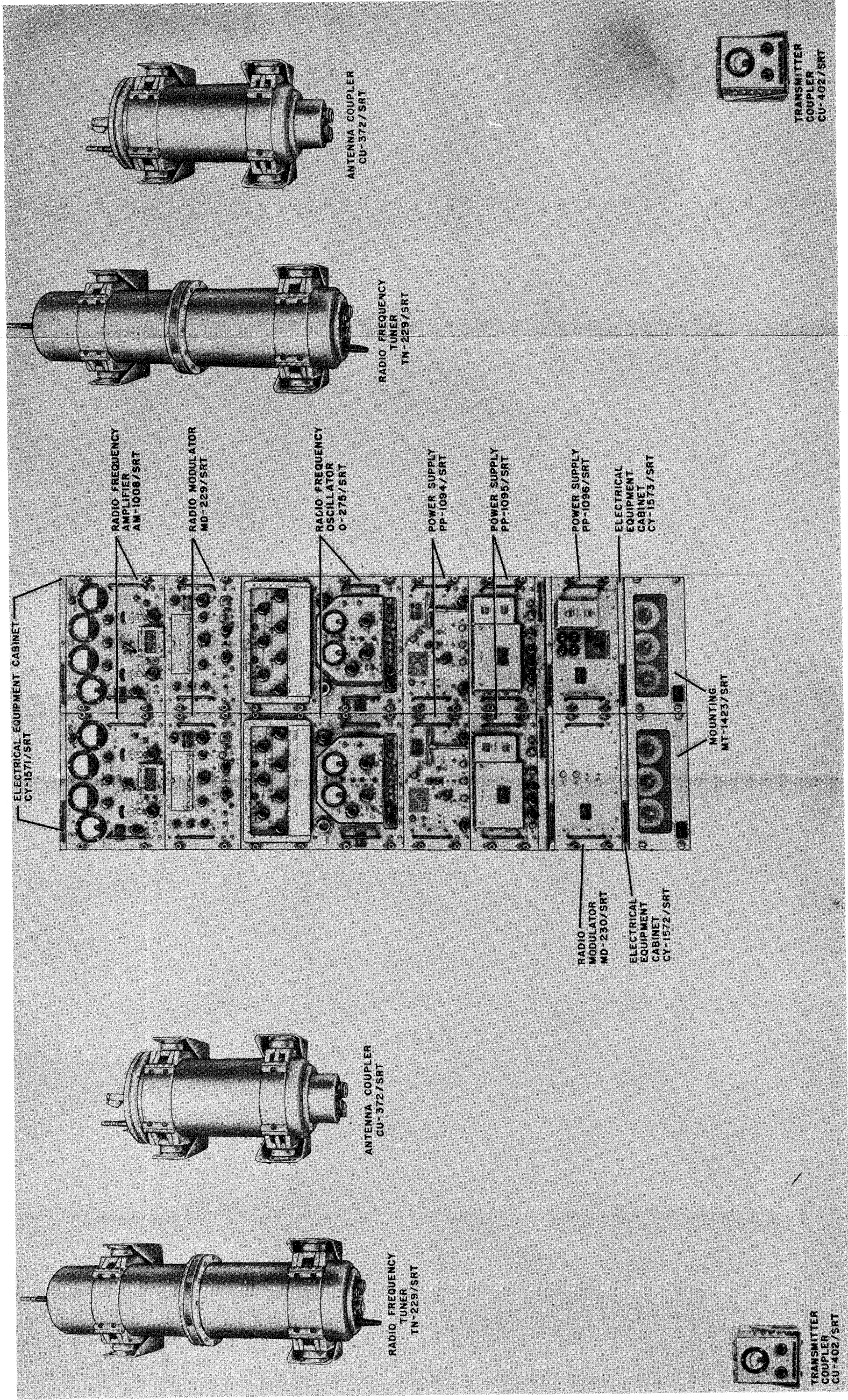


Figure 3-3. Simplified Pictorial View, Radio Transmitting Set AN/SRT-16

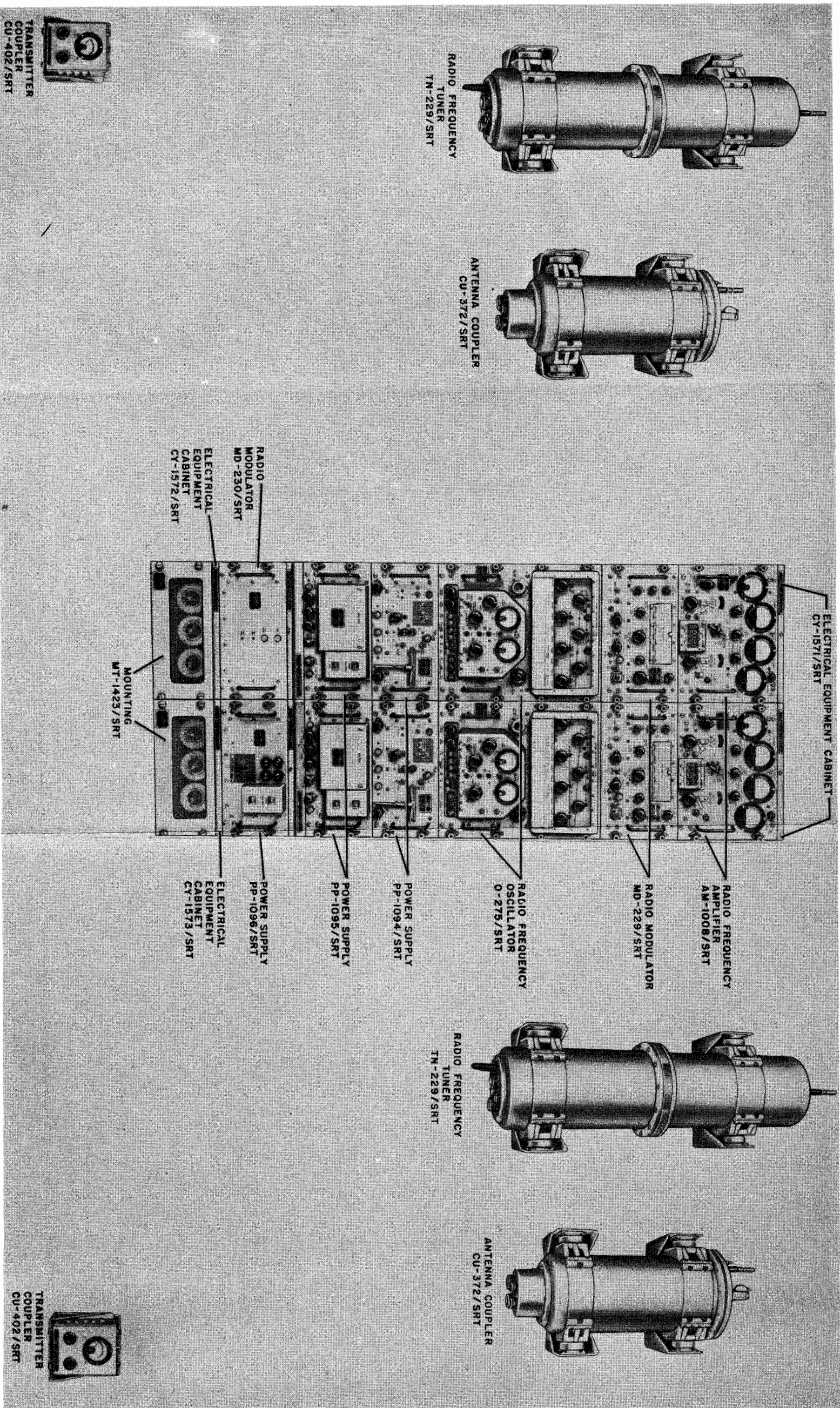


Figure 3-3. Simplified Pictorial View, Radio Transmitting Set AN/SRT-16

Navy packing, tighten the gland nuts, and seal the end of the gland nut with plastic sealing compound. If cable clamps with retaining lips are used, make certain that the end of the armor and jacket butt up against the inside of the lip. If clamps with retaining lips are not used, the armor and jacket must extend at least 1/8 inch beyond the clamp. Although no packing is required for cable clamps, the area between the clamp and the cable must be sealed with plastic sealing compound. BUSHIPS drawing 9-S-3980-L may be used as a guide for either stuffing tube or cable clamp installations. The individual conductors projecting from the inside of the cable entrance cover plate should be fed into the mounting and run forward to hang over the front screen of the mounting. Remove the UG-23B/U connector from the installation material and assemble it to the incoming RG-8/U cable (R-RA1), following the procedure outlined in the Cable Assembly Instruction (figure 3-12).

If such applies, a connector that will mate to a UG-89/U connector should be assembled to the coaxial cable incoming from a receiver (this connector is not supplied with the equipment). Replace the bottom cable entrance cover plate, securing it in place with the machine screws provided in the equipment. Repeat the above procedure for all cables entering the rear cable entrance.

The mounting is provided with two ground straps. Ground the mounting by securing the free end of each strap to a clean, unpainted portion of the foundation or ship's bulkhead. Then secure the mounting to the bottom shock mounts with the 5/8-11 x 1-inch long hex head cap screws and 5/8-inch lock washers provided in the installation kit (items 4 and 5 on figure 3-23). Pass the individual conductors of all incoming cables except the coaxial cables through the top left-hand cable slot and lace the portion in the mounting together with interstack cable "A". Since access to the mounting is

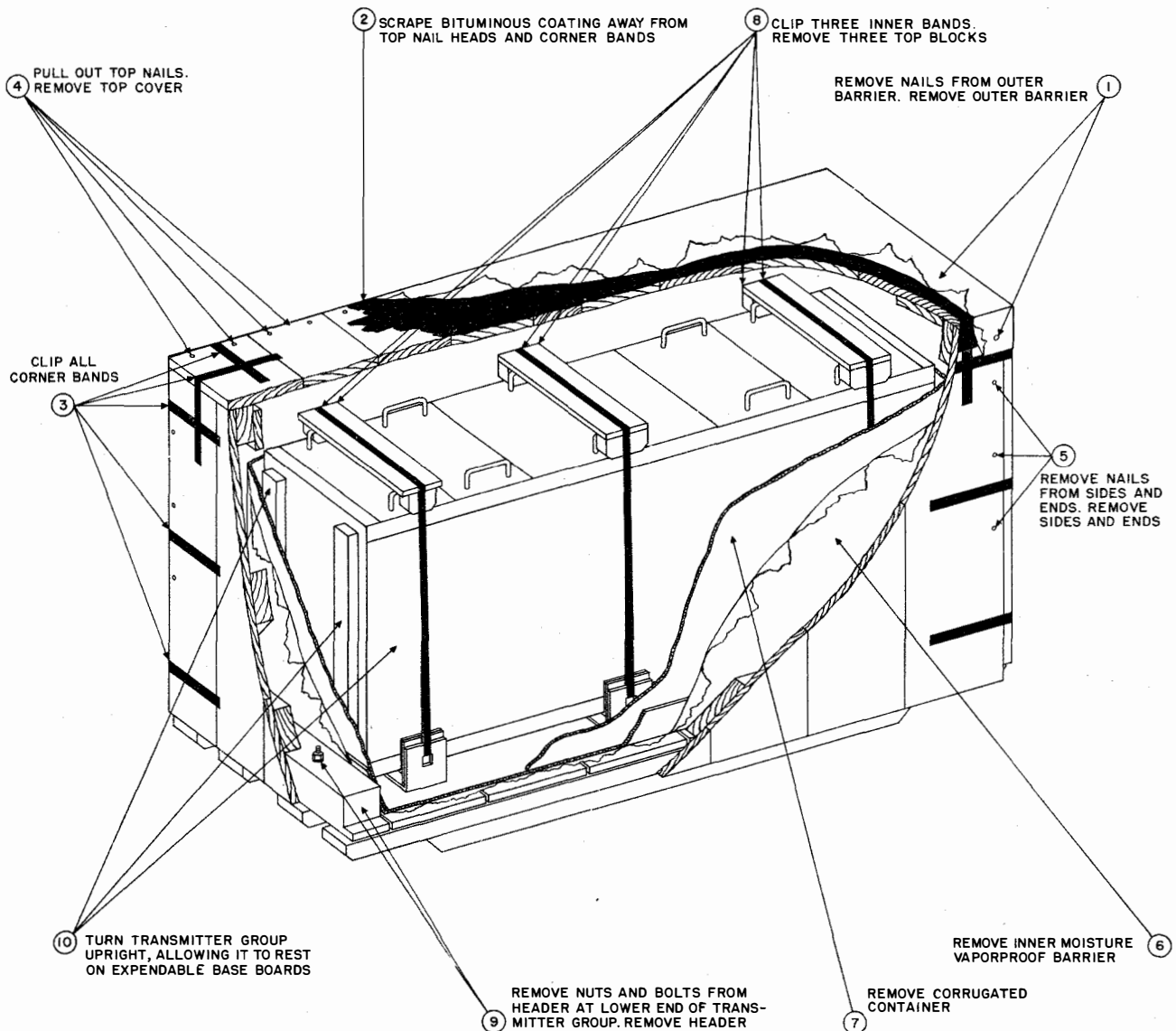


Figure 3-4. Transmitter Group OA-684/SRT, Unpacking Procedure

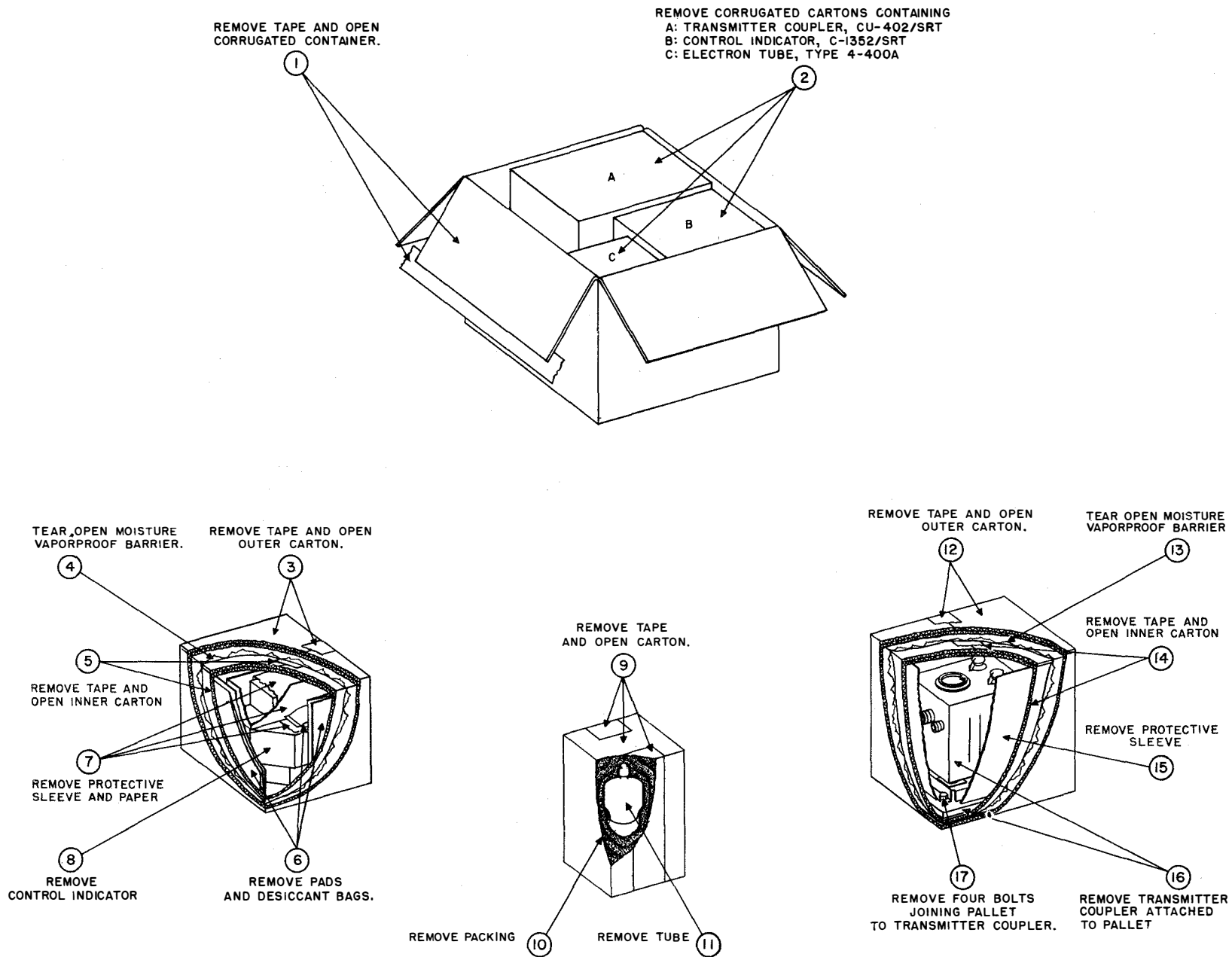


Figure 3-5. Transmitter Coupler CU-402/SRT, Control-Indicator C-1352/SRT, and Electron Tube 4-400A, Unpacking Procedure

very limited after other units have been mounted on top of it, all adjustments and connections in this unit should be made at this time. Then replace and reconnect the two capacitors, C-701 and C-702, in the mounting.

Secure the two sway mounts (item 14 on figure 3-23) in place on the bulkhead. Remove the top cover plate from the transmitter group cabinet.

Remove the five equipment drawers from the transmitter group cabinet by first loosening the captive screws that secure the drawers to the cabinet, using the special wrench mounted on the low voltage power supply front panel. Starting with the top drawer, pull the drawer forward on the rails until a stop on the rail is engaged. Disconnect the connectors of the retractable cabling from the connectors on the drawer. The connector assembly of the retractable cabling has an angle that should be latched on the post that is located on the transmitter group cabinet front above the top drawer, which, in turn, keeps the retractable cabling in its extended position. To complete the removal of the drawer, remove the two machine screws, one on each inner rail, that act as retainers for the latch in case of failure of the latch spring. Depress the latch on each inner rail and pull the chassis forward to clear the projection on the front of the rail.

WARNING

The drawer is now free to be removed entirely from the cabinet. Personnel removing the chassis should now be prepared to support the entire weight of the drawer.

Continue to pull the drawer forward until the inner slide disengages from the front rail roller, at which point the drawer will be completely free from the cabinet. Repeat the above process for each succeeding drawer. For all other drawers, the retractable cabling, after it is disengaged from the drawer, is returned to the rear of the cabinet.

Remove and discard the expendable base boards. Secure one eyebolt (item 8 on figure 3-23) in each of the tapped holes in the top of the transmitter group cabinet. Hoist the cabinet into position a few inches above the mounting.

CAUTION

Special care must be taken to avoid damaging the aligning tabs on the transmitter group side panels and the ventilation duct extensions on top of the mounting.

Block the cabinet in place a few inches above the top of the mounting. Two coaxial cables, terminating in connectors P-609 and P-610, are located, loose, in the bottom of the transmitter group cabinet. Pull these cables, with their connectors, down through the left-hand rear cable slot. Mate connectors P-609 and P-610, now in the mounting, with the corresponding connectors that have been affixed to the incoming cables, using the Interconnecting Cabling Diagram (figure 3-30) as a guide. Feed the other cables coming from the mounting through

the left cable slot in the bottom of the cabinet. Then carefully lower the cabinet into place on top of the mounting and secure it in place with the 1/2-13 x 1-inch cap screws and 1/2-inch lock washers (items 6 and 7 on figure 3-23) provided in the installation materials. Secure the back of the transmitter to the rear sway mounts with the 3/8-16 x 1-inch hex head cap screws and 3/8-inch lock washers provided in the installation materials (items 15 and 16 on figure 3-23). Remove the eyebolts from the top of the cabinet but do not replace the top cover plate until the interconnecting wiring has been completed. Remove the 10 leveling inserts (item 10 on figure 3-23) from the installation material and insert them in the tapped holes on the left side of the transmitter group cabinet. Similarly, insert the two leveling inserts (item 12 on figure 3-23) in the tapped holes on the left side of the mounting. Insert 12 plug buttons (item 13 on figure 3-23) in the leveling inserts. Insert the remaining 12 plug buttons (item 11 on figure 3-23) in the holes on the right side of the transmitter group cabinet and mounting.

(2) AN/SRT-15 ARRANGEMENT "A₁."—This method of assembly is considered the standard arrangement of the AN/SRT-15. Using the transmitter bay outline drawing (figure 3-24) as a guide, prepare level, accurately drilled foundations for the bottom and rear of the two stacks.

Secure all eight shock mounts (items 5 and 6 on figure 3-24) to the deck foundation but do not tighten the bolts completely. Remove the expendable base blocks from each mounting. Set each mounting on its set of shock mounts and check the spacing of the shock mounts by threading a 5/8-11 x 1-inch long hex cap screw (item 7 on figure 3-24) through the mounting floor into each shock mount. If the space between the two mountings measures 3/32 inch and the tapped hole in each shock mount lies directly below the matching hole in the mounting floor, the mounting may be removed and the shock mounts tightened in place on the foundation. If holes in mounting and shock mounts are not aligned, the foundation must be redrilled as required to correct spacing of shock mounts.

The rear of each mounting contains four cable entrances: a rectangular entrance of 24 square inches in the rear wall; a 15-square inch entrance in the mounting floor; a 2-inch diameter entrance through the rear gusset on each side. The cables required for each stack are shown on figure 3-31, the AN/SRT-15 Interconnecting Cabling Diagram. In this arrangement, the rear and bottom cable entrances may be used for interconnecting cables having an external run.

The cable entry in the gusset of each adjoining side is used for the passage of the prefabricated interstack cables supplied with the equipment. In the standard arrangement these unarmored, interstack cables are used in place of the Navy type cables indicated by asterisks on AN/SRT-15 Interconnecting Cabling Diagram (figure 3-31).

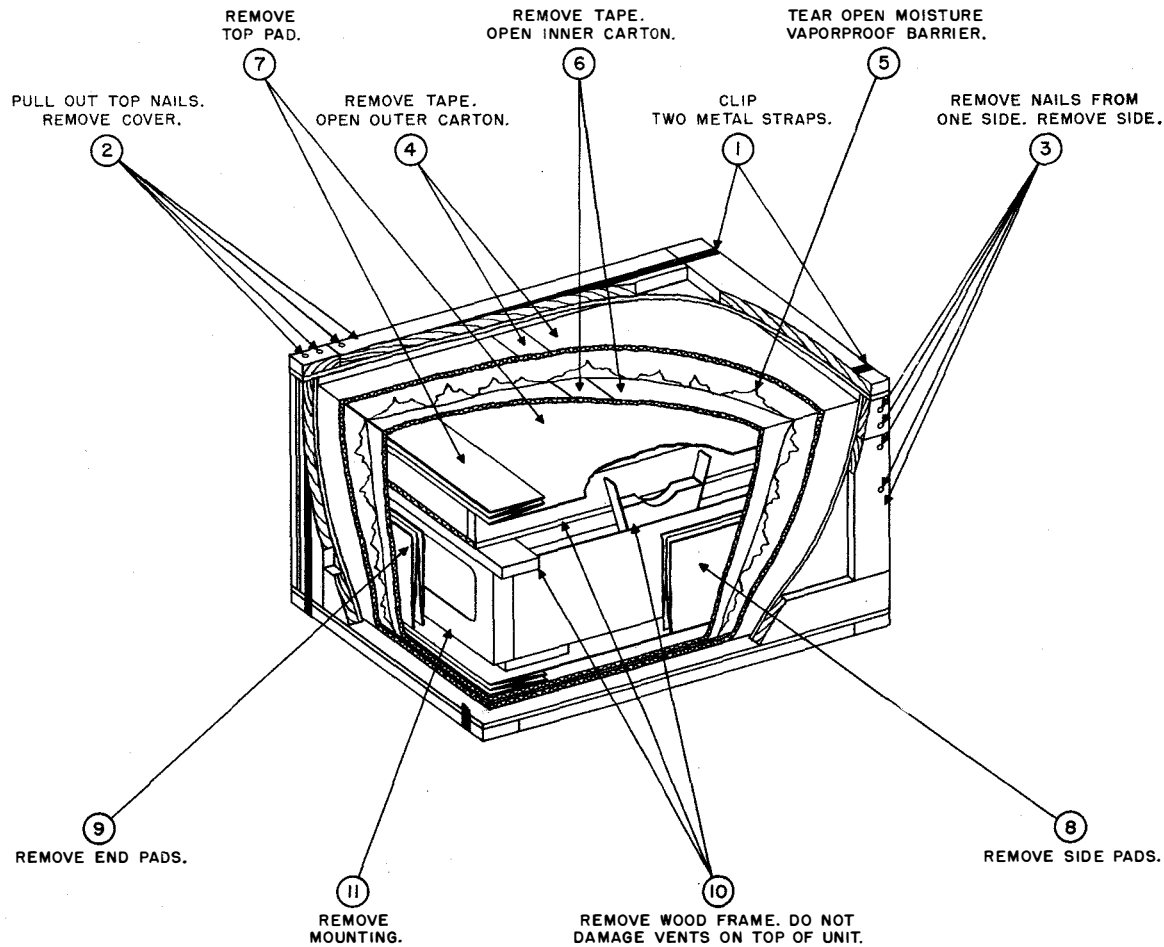


Figure 3-6. Mounting MT-1423/SRT, Unpacking Procedure

Although the rear wall cable entrance is large enough to accommodate all the external cables in the majority of AN/SRT-15 installations, both rear and bottom cable entrances may be used if the number of cables entering the mounting is exceptionally large or if clearance to the rear cable entrance is restricted.

Remove the side panels from the adjoining sides of the two mountings. In each side panel, cut a hole corresponding in diameter and location to that in the side gusset. Then replace the two side panels on the mountings. Remove two leveling inserts (item 20 on figure 3-24) from the installation materials box and thread them into the tapped holes on the left side of the right mounting.

Locate the two capacitors, C-701 and C-702, in the rear of each mounting. These capacitors and their clamps should be removed from the mounting during installation to facilitate cable handling. Loosen and remove the two outside screws on each clamp; do not allow the screws or lock washers to fall into the mounting while this is being done. Disconnect each of the leads from each capacitor. The two capacitors and their clamps may then be removed and set aside to be replaced when the mounting assembly is completed.

Using the AN/SRT-15 Interconnecting Cabling Diagram (figure 3-31) as a guide, connect the specified cables to the indicated terminals of E-702 in the right-hand mounting.

Note

See Terminal Board and Cable Entrance Data (figure 3-26) for location of terminal boards discussed in this section.

Run the cable going to the transmitter group (interstack cable "A") under the flange holding the terminal board and feed the cable through the cable clamp mounted on the center of the angle iron behind the terminal board. (See figure 3-13.) Tighten the clamp and feed the free end of the cable through the upper left cable slot. Run the cable going to the left mounting (interstack cable "B") under the flange and feed this cable through the cable clamp mounted on the left side of the angle iron behind the terminal board. Tighten the clamp and then pass the free end of this cable through the gusset entry on the left side of the mounting.

Set the left-hand mounting in its approximate position and feed the free end of cable from the right-hand mounting through the gusset entrance in the right side

of the mounting. Do not make the connections to E-702 in the left-hand mounting at this time and do not pass the cable through the clamp.

Before making cuts in any of the rear or bottom entrance cover plates, plan on paper the number and diameter of the external cables using each entrance. All incoming cables enter the right mounting except the three-phase power cable (R-RT2) that enters the left-hand mounting.

Note

An r-f output for a receiver terminated in a BNC connector (P-609) is made available inside the transmitter bay. If an external receiver is to be connected to this output, provision should be made in the stuffing tube plan for the incoming coaxial cable from the receiver. The cable assembly, consisting of R-RT13 and P-3315 located in the installation material, should also be included in the stuffing tube plan.

All interstack cables should enter the mountings through the gusset entrance. Either stuffing tubes or cable clamps may be used to secure individual external cables to the entry plates. If the former method is chosen, 45° or 90° tubes may be used where clearance is limited or obstructions restrict the cable approach. In such installations, cover plate calculations must be based on the clearance required to install the stuffing tubes rather than the outer diameter of cables. Remove one or both cable entry cover plates as required and cut a hole of proper diameter for each cable passing through the plate. If stuffing tubes are to be used, they should be secured to the cover plates by brazing or welding. Refer to BUSHIPS drawing 9-S-3980-L for specific details of stuffing tube installation.

With the exception of the jackets or coaxial shielding required for r-f cables, remove armor and jackets from the internal runs of all cables entering the mounting. Only the individual insulated conductors should enter the mounting. Strip the last 42 inches of all external cables terminating in the transmitter group cabinet and the last 38 inches of the three-phase power cable (R-RT2).

Set the mounting in its approximate position. If stuffing tubes are used, feed the external cables through the stuffing tubes on the cable entrance cover plate. If straight stuffing tubes are used, the cable armor and sheath must extend at least 1/8 of an inch beyond the inner edge of the stuffing tube. Where 45° or 90° tubes are used, the armor and jacket should extend a minimum of 1/8 inch beyond the stuffing tube gland. The RG-8/U cable, R-RA1, and the coaxial cable from the receiver, if such applies, should extend 10 inches beyond the stuffing tube. Pack each stuffing tube with standard Navy packing, tighten the gland nut, and seal the end of the gland nut with plastic sealing compound. If cable clamps with retaining lips are used, make certain that the end of the armor and jacket

butt up against the inside of the lip. If clamps with retaining lips are not used, the armor and jacket must extend at least 1/8 inch beyond the clamp. Although no packing is required for cable clamps, the area between the clamp and the cable must be sealed with plastic sealing compound. BUSHIPS drawing 9-S-3980-L may be used as a guide for either stuffing tube or cable clamp installations.

The individual conductors projecting from the inside of the cable entrance cover plate should be fed into the mounting and run forward to hang over the front screen of the mounting. Remove the UG-23B/U connector from the installation material and assemble it to the incoming RG-8/U cable (R-RA1) following the procedures outlined in the Cable Assembly Instruction (figure 3-12). If such applies, a connector that will mate to a UG-89/U connector should be assembled to the coaxial cable incoming from a receiver (this connector is not supplied with the equipment). Replace the bottom cable entrance cover plate, securing it in place with the machine screws provided in the equipment. Repeat the above procedure for all cables entering the rear cable entrance.

Feed the interstack cables (cables "C" and "F") from the transmitter group to the two booster units through the left-hand gusset entrance, and up through the left-hand cable slot. The two cables should protrude above the top of the right mounting according to the length required to fan out on the transmitter group terminal boards. Feed interstack cable "G" through the left side panel entrance of the right-hand mounting and pass the cable up through the area between the left-side panel and the structural members of the mounting. Cable "G" should protrude above the top of the right mounting according to the length required to connect to the transmitter group terminal board (E-608). Make certain that the base mount to base mount cable is not clamped tightly in the left mounting and then slide the two mountings slightly apart. Using abrasion-resistant tape, wrap interstack cables "C" and "F" together at the point where they pass through the side panel of the right mounting for a length of four to six inches centered at the side panel. Similarly, wrap interstack cable "G" and the base mount to base mount cable (cable "B") together. Feed cables "C" and "F" through the right side panel of the left-hand mounting and then up through the area between the side panel and the structural members of the left mounting. Feed the other two cables through both the right side panel and right side gusset entrance of the left mounting. Slide the two mountings into their approximate positions so that the two side panels are adjoining. Feed interstack cable "G" across the floor of the left mounting, through the left side gusset entrance, and then up through the area between the left side panel and the structural members of the mounting. In the left mounting, remove the screw holding the cable clamp on the left side of the angle iron behind the terminal board, E-702, and mount the clamp

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in the corresponding tapped hole on the right side of the angle iron. Pass cable "B" through this clamp, under the angle iron to E-702 and tighten the clamp. Using the Interconnecting Cabling Diagram, figure 3-31, as a guide, make the indicated connections on E-702 in the left-hand mounting.

Each mounting is provided with two ground straps. Ground the mounting by securing the free end of each strap to a clean, unpainted portion of the foundation or ship's bulkhead. Thread the adjustable inserts in or out until the space between the two mountings is 3/32 inch. Then secure each mounting to the bottom shock mounts with the 5/8-11 x 1-inch long hex head cap screws and 5/8-inch lock washers provided in the installation kit (items 7 and 8 on figure 3-24). Using the 5/16-18 x 2-inch long hex head cap screws, 5/16-inch lock washers and 5/16-inch nuts provided in the installation materials (items 11, 12, and 13 on figure 3-24), secure the front and rear of the two mountings together.

Lace all the conductors of all cables, except the interstack and the coaxial cables, entering the right mounting together and pass them through the upper left cable slot on the top of the right mounting. The three-phase power cable (R-RT2) entering the left-hand mounting should be fed through the cable slot on the left side of the mounting frame. Then replace and reconnect the two capacitors, C-701 and C-702, in each mounting.

Secure the two sway mounts (item 22 on figure 3-24) in place on the bulkhead foundation. Remove the top cover plate from the transmitter group cabinet.

Remove the five equipment drawers from the transmitter group cabinet, by first loosening the captive screws that secure the drawers to the cabinet, using the special wrench mounted on the low voltage power supply front panel. Starting with the top drawer, pull the drawer forward on the rails until a stop on the rail is engaged. Disconnect the connectors of the retractable cabling from the connectors on the drawer. The connector assembly of the retractable cabling has an angle that should be latched on the post that is located on the transmitter group cabinet front above the top drawer, which, in turn, keeps the retractable cabling in its extended position. To complete the removal of the drawer, remove the two machine screws, one on each inner rail, that act as retainers for the latch in case of failure of the latch spring. Depress the latch on each inner rail and pull the chassis forward to clear the projection on the front of the rail.

WARNING

The drawer is now free to be removed entirely from the cabinet. Personnel removing the chassis should now be prepared to support the entire weight of the drawer.

Continue to pull the drawer forward until the inner slide disengages from the front rail roller, at which

point the drawer will be completely free from the cabinet. Repeat the above process for each succeeding drawer. For all other drawers, the retractable cabling, after it is disengaged from the drawer, is returned to the rear of the cabinet.

Remove and discard the expendable base boards. Secure one eyebolt (item 16 on figure 3-24) into each of the four tapped holes on the top of the transmitter group cabinet. Hoist the cabinet into position a few inches above the right-hand mounting.

CAUTION

Special care must be taken to avoid damaging the aligning tabs of the transmitter group and the ventilation duct extensions on top of the mounting.

Block the cabinet in place a few inches above the mounting. The coaxial cables, terminating in connectors P-609 and P-610, are located, loose, in the bottom of the transmitter group cabinet. Pull these cables, with their connectors, down through the left-hand rear cable slot. Feed interstack cable "G" coming from the mounting through area on the bottom left side of the cabinet where terminal board E-608 is mounted. Mate connectors P-609 and P-610, now in the mounting, with the corresponding connectors which have been affixed to the incoming cables, using the Interconnecting Cabling Diagram (figure 3-31) as a guide. Feed the other cables coming from the right-hand mounting through the left-hand cable slot in the bottom of the cabinet. Then carefully lower the cabinet into place on top of the mounting and secure it in place with the 1/2-13 x 1-inch long cap screws and 1/2-inch lock washers (items 9 and 10 on figure 3-24) provided in the installation materials box. Remove the eyebolts from the top of the cabinet but do not replace the top cover plate until the interconnecting wiring has been completed. Remove four leveling inserts (item 18 on figure 3-24) from the installation material and thread them into the four lowest tapped holes on the left side of the transmitter group cabinet. Thread the inserts in or out until they project 3/32 inch from the side of the cabinet.

Remove the high voltage power supply drawer from its cabinet in the same manner as described for the drawers in the transmitter group cabinet. Resting the front of the cabinet on the front of the mounting, feed the interstack cable "C" coming from the left-hand mounting, through the area between the right side panel of the high voltage power supply cabinet and its structural members, and into the cabinet through the right side entry. Feed interstack cable "F" through the area between the cabinet right side panel and its structural members and out of the top of the cabinet. Feed the interstack cable "G", coming from the left side of the mounting, along the left side of E-1404 and out of the top of the cabinet. Feed the three-phase power cable (R-RT2) through the left-hand cable slot in the bottom of the high voltage supply cabinet. Lower the

cabinet into place so that all aligning tabs are inside the side panels. Secure the cabinet to the mounting with the hex head cap screws and lock washers (items 9 and 10 on figure 3-24) provided in the installation materials box. Feed the high voltage power supply to the high level modulator interstack cable (cable "D") from the high voltage power supply cabinet, through the right side entry at the rear, up through the area between the right side panel and the cabinet structure, and out of the top of the cabinet, making sure the cable protrudes far enough to fan out to the high level modulator cabinet terminal boards. Lace together cables "D" and "F".

Remove the high level radio modulator from its cabinet. Resting the front of the cabinet on the high voltage power supply, feed the interstack cables "D" and "F" coming from the power supply through the area between the high level modulator cabinet right side panel and its structure and into the cabinet through the right side entry. Feed interstack cable "G" into the area of the cabinet occupied by E-1408. Lower the modulator cabinet into place, making certain that all aligning tabs are inside the side panels. Secure the modulator cabinet to the high voltage power supply cabinet with the cap screws and lock washers (items 9 and 10 on figure 3-24) provided in the installation materials box. Feed the high level modulator to the high voltage power supply interstack cable (cable "E")

from the location of terminal board E-1408, in the high level modulator, down in the corresponding area of the high voltage power supply cabinet to terminal board E-1404. Temporarily lace this cable to the cabinet structure for support.

Bolt the two stacks together with the hex head cap screws, lock washers and nuts (items 11, 12, and 13 on figure 3-24). Where the spacing between the stacks is excessive, thread the inserts out until 5/32 inch of it projects from the side of the frame and then take up the rest of the spacing by tightening the bolts holding the two stacks together. Secure the back of the transmitter group cabinet to the sway mounts with the 3/8-16 x 1-inch long hex head cap screws and 3/8-inch lock washers (items 23 and 24 on figure 3-24) provided with the installation materials. Thread the remaining two leveling inserts (item 20 on figure 3-24) into the left side of the left mounting. Thread the remaining 10 leveling inserts (item 18 on figure 3-24) into the left side of the booster cabinets and the remaining tapped holes in the left side of the transmitter group cabinet. Insert 12 plug buttons (item 21 on figure 3-24) in the leveling inserts. Insert 12 plug buttons (item 19 on figure 3-24) in the holes on the right side of the transmitter group cabinet and mounting.

(3) AN/SRT-16 ARRANGEMENT "D".—This method of assembly is considered the standard arrangement of the AN/SRT-16. Using the transmitter bay

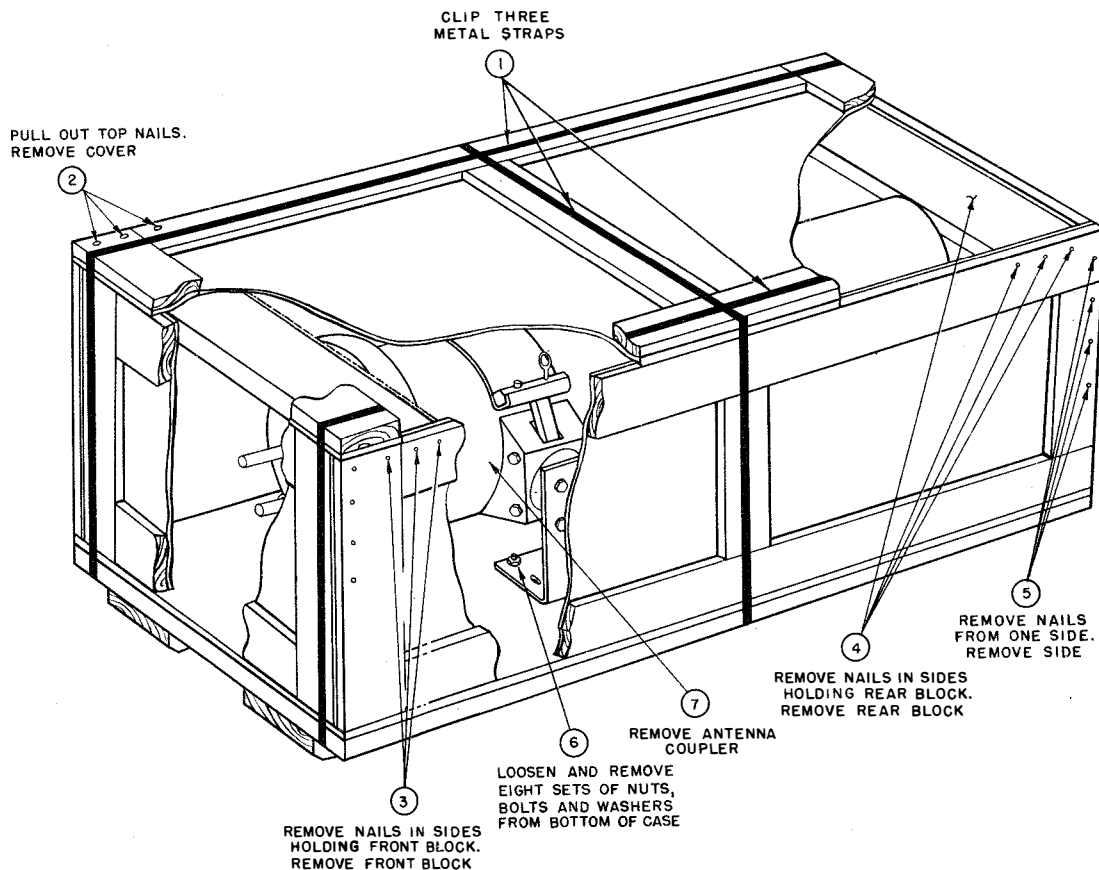


Figure 3-7. Antenna Coupler CU-372/SRT, Unpacking Procedure

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outline drawing (figure 3-25) as a guide, prepare level, accurately drilled foundations for the bottom and rear of the two stacks.

Secure all eight shock mounts (item 4 on figure 3-25) to the deck foundation but do not tighten the bolts completely. Remove the expendable base blocks from each mounting. Set each mounting on its set of shock mounts and check the spacing of the shock mounts by threading a 5/8-11 x 1-inch long hex head cap screw (item 5 of figure 3-25) through the mounting floor into each shock mount. If the space between the two mountings measures 3/32 inch and the tapped hole in each shock mount lies directly below the matching hole in the mounting floor, the mounting may be removed and the shock mounts tightened in place on the foundation. If holes in mounting and shock mounts are not aligned, the foundation must be redrilled as required to correct spacing of shock mounts.

The rear of each mounting contains four cable entrances: a rectangular entrance of 24 square inches in the rear wall; a 15-square inch entrance in the mounting floor; a two-inch diameter entrance through the rear gusset on each side. The cables required for each stack are illustrated in the AN/SRT-16 Interconnecting Cabling Diagram (figure 3-32). In this arrangement the rear and bottom cable entrances may be used for interconnecting cables having an external run.

The cable entry in the gusset of each adjoining side is used for the passage of the prefabricated interstack cables supplied with the equipment. In the standard arrangement these unarmored, interstack cables are used in place of the Navy-type cables indicated by asterisks on the AN/SRT-16 Interconnecting Cabling Diagram (figure 3-32).

Although the rear wall cable entrance is large enough to accommodate all the external cables in the majority of AN/SRT-16 installations, both rear and bottom cable entrances may be used if the number of cables entering the mounting is exceptionally large or if clearance to the rear cable entrance is restricted.

Where corresponding cables serving the two transmitter groups have completely parallel runs, the two individual cables may be combined into a single larger cable. For example, the two TTHFWA-1-1/2 cables, carrying teletype input to the two transmitter groups (figure 3-32), may be replaced by a single TTHFWA-3 if the far ends of both cables terminate at the same point. The TTHFWA-3 may enter either of the two stacks; the two individual conductors feeding the other stack should be run through the gusset cable entrances in the mounting side panels.

Oven heaters in both transmitter groups are fed by a single DSGA-3 line (R-RT3). (See figure 3-32.) This cable is run into the left-hand mounting and terminates on E-602, terminals 21 and 22. Two conductors of the transmitter group to the transmitter group interstack cable are used to connect the heaters in the left transmitter group in parallel with those of the right.

Remove the side panels from the adjoining sides of the two mountings. In each side panel cut a hole corresponding in diameter and location to that in the side gusset. Then replace the two side panels on the mountings. Remove two leveling inserts (item 16 on figure 3-25) from the installation materials box and thread them into the tapped holes on the left side of the right mounting. Locate the capacitors, C-701 and C-702, in the rear of each mounting. These capacitors and their clamps should be removed from the mounting during installation to facilitate cable handling. Loosen and remove the two outside screws on each clamp; do not allow the screws or lock washers to fall into the mounting while this is being done. Disconnect each of the leads from each capacitor. The two capacitors and their clamps may then be removed and set aside to be replaced when the mounting assembly is completed.

Using the AN/SRT-16 Interconnecting Cabling Diagram (figure 3-32) as a guide and assuming the left-hand stack to be the 500-watt stack, connect one end of the base mount to base mount and base mount to transmitter group interstack cables (interstack cables "L" and "N") to the indicated terminals on E-702 in the right mounting.

Note

See Terminal Board and Cable Entrance Data (figure 3-26) for location of terminal boards discussed in this section.

In the right mounting, remove the screw holding the cable clamp in the center of the angle iron behind the terminal board, E-702, and mount the clamp in the corresponding tapped hole on the right side of the angle iron. Run the cable going to the right transmitter (interstack cable "L") under the flange holding the terminal board and feed the cable through the cable clamp mounted on the right side of the angle iron. (See figure 3-13.) Tighten the clamp and feed the free end of the cable along the floor of the right mounting, through the right side gusset entry and up through the space between the right side panel and the structure of the mounting. Run the cable going to the left mounting (interstack cable "N") under the flange and feed this cable through the cable clamp mounted on the left side of the angle iron behind the terminal board. Tighten the clamp, and then pass the free end of this cable through the gusset entry on the left side of the mounting.

Set the left-hand mounting in its approximate position and feed the free end of the base mount to the base mount cable, cable "N", through the gusset entrance in the right side of this mounting. Do not make the connections to E-702 in the left-hand mounting at this time and do not pass the cable through the clamp.

Before making cuts in any of the rear or bottom entrance cover plates, plan on paper the number and diameter of the external cables using each entrance.

Note

An r-f output for a receiver terminated in a BNC connector (P-609) is made available in-

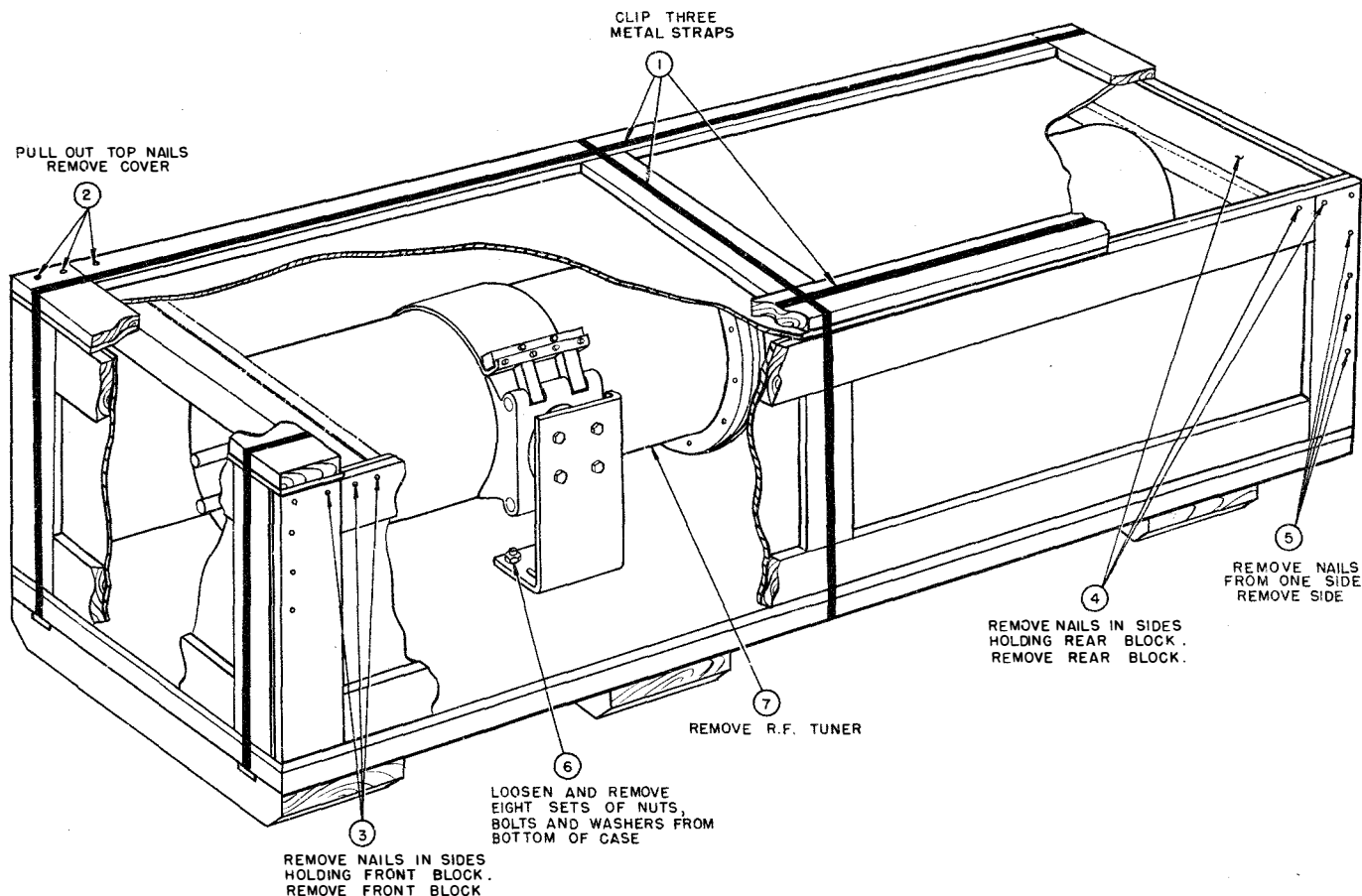


Figure 3-8. Radio Frequency Tuner TN-229/SRT, Unpacking Procedure

side. the transmitter bay. If an external receiver is to be connected to this output, provision should be made in the stuffing tube plan for the incoming coaxial cable from the receiver. Two cable assemblies, each consisting of R-RT15 and P-3315, located in the installation material, should also be included in the stuffing tube plan.

All interstack cables should enter the mountings through the gusset entrance. Either stuffing tubes or cable clamps may be used to secure individual external cables to the entry plates. If the former method is chosen, 45° or 90° tubes may be used where clearance is limited or obstructions restrict the cable approach. In some installations cover plate calculations must be based on the clearance required to install the stuffing tubes rather than the outer diameter of cables. Repeat the following procedure for each of the two mountings. Remove one or both cable entry cover plates as required and cut a hole of proper diameter for each cable passing through the plate. If stuffing tubes are to be used, these fixtures should be secured to the cover plates by brazing or welding. Refer to BUSHIPS drawing 9-S-3980-L for specific details of stuffing tube installation.

With the exception of the jackets on coaxial cables, remove armor and jackets from the internal runs of all cables entering the mounting. Only the individual insulated conductors should enter the mounting. Strip the last 75 inches of all external cables terminating in the transmitter group cabinet and 38 inches of the three-phase power cable (R-RT2) connected to the high voltage power supply cabinet.

Set the mounting in its approximate position. If stuffing tubes are used, feed the external cables through the stuffing tubes mounted on the cable entrance cover plate. If straight stuffing tubes are used, the cable armor and sheath must extend at least 1/8 inch beyond the inner edge of the stuffing tube. Where 45° or 90° tubes are used, the armor and jacket should extend a minimum of 1/8 inch beyond the stuffing tube gland. The two RG-8/U cables (1-R-RA1 and 2-R-RA1) and the two coaxial cables from receivers, if such applies, should extend 10 inches beyond the stuffing tube. Pack each stuffing tube with standard Navy packing, tighten the gland nuts, and seal the end of the gland nut with plastic sealing compound. If cable clamps with retaining lips are used, make certain that the end of the armor and jacket butt up against the inside of the lip.

3 Section
Paragraph 4 a (3)

NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A

INSTALLATION

If cable clamps with retaining lips are not used, the armor and jacket must extend at least 1/8 inch beyond the clamp. Although no packing is required for cable clamps, the area between the clamp and the cable must be sealed with plastic sealing compound. BUSHIPS drawing 9-S-3980-L may be used as a guide for either stuffing tube or cable clamp installations.

The individual conductors projecting from the inside of the cable entrance cover plates should be fed into the mounting and run forward to hang over the front screen of the mounting. Remove the two UG-23B/U connectors from the installation material and assemble them to the two incoming RG-8/U cables following the procedure outlined in the Cable Assembly Instruction (figure 3-12). If such applies, two connectors that will mate to UG-89/U connectors should be assembled to the two coaxial cables incoming from receivers (these connectors are not supplied with the equipment). Replace the bottom cable entrance cover plates,

securing them in place with the machine screws provided in the equipment. Repeat the above procedure for all cables entering the rear cable entrance.

Feed the interstack cable from the high voltage power supply to the high level modulator and to the 500-watt transmitter group (interstack cables "H" and "J") in through the left gusset entrance, across the floor of the right mounting, through the right side gusset entrance, and up through the area between the right side panel and the structure of the right mounting. These two cables should protrude above the top of the right-hand mounting according to the length required to fan out on the high voltage power supply terminal boards. In the same manner feed the interstack cable between the two transmitter groups (cable "P") through the right side mounting, except this cable should protrude above the top of the right-hand mounting far enough to pass through the high voltage power supply cabinet, and then be able to fan out on

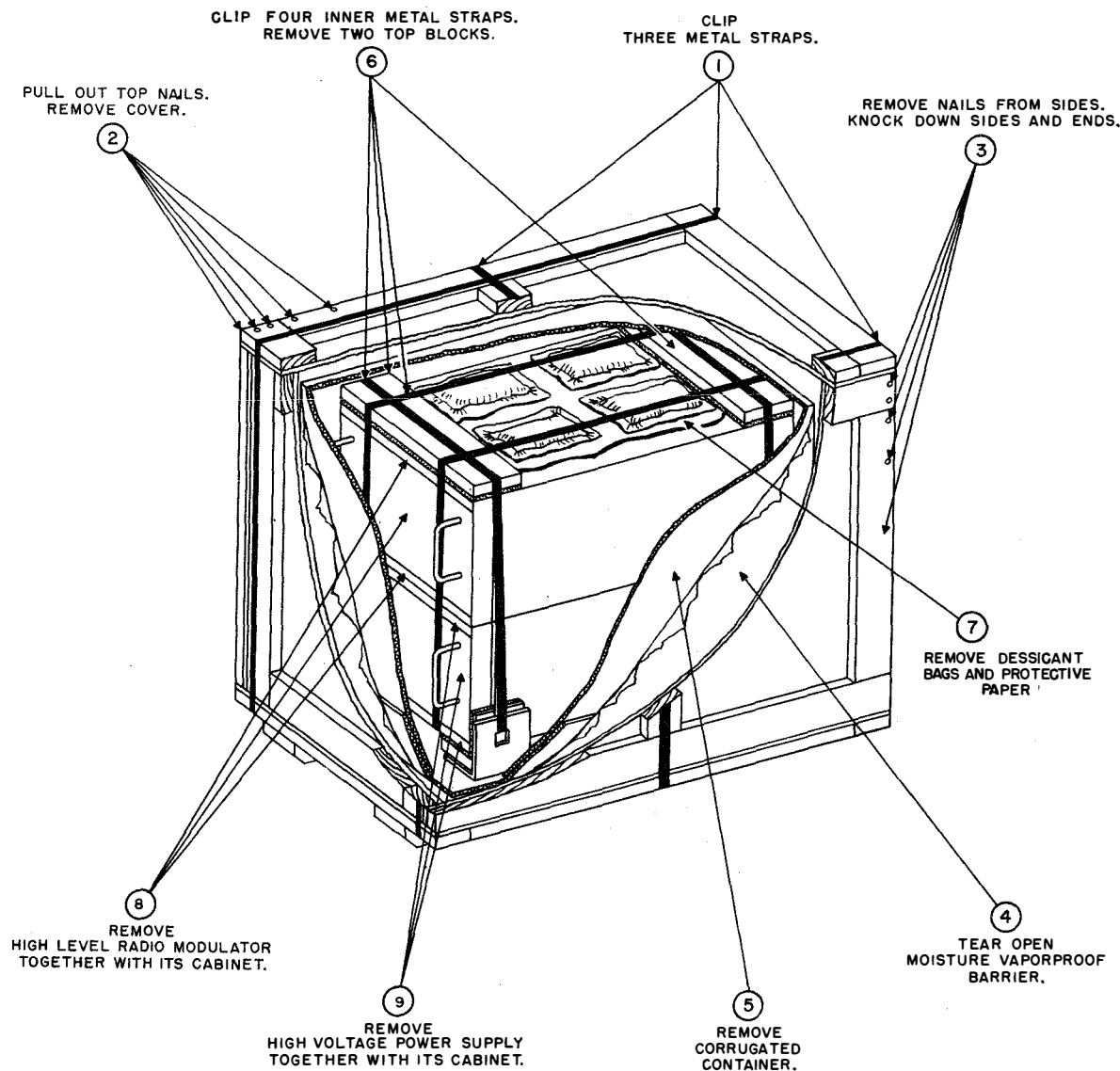


Figure 3-9. Radio Modulator-Power Supply OA-685/SRT, Unpacking Procedure

the terminal boards of the transmitter group, which will mount on top of the high voltage power supply. Feed interstack cable "K" through the left side panel entrance of the right mounting and pass the cable up through the area between the left side panel and the structure of the mounting. Cable "K" should protrude above to the top of the right mounting according to the length required to connect to the high voltage power supply terminal board (E-1404). Make certain that the base mount to base mount cable is not clamped in the left mounting and then slide the two mountings slightly apart. Using abrasion-resistant tape, wrap interstack cables "H", "J", and "P" together at the point where they pass through the side panel of the right mounting for a length of three inches to the right of this point and one inch to the left of this point. Wrap tape around cable "N" for a length of three inches on both sides of the point. Wrap tape around cable "K" for a length of three inches to the left of the point and one inch to the right of the point.

Feed cables "H", "J", and "P" through the right side panel of the left mounting and then up through the area between the right side panel and the structure of the left mounting. Feed cables "K" and "N" through both the right side panel and right side gusset entrance of the left mounting. In the left mounting remove the screw holding the cable clamp on the left side of the angle iron behind the terminal board, E-702, and mount the clamp in the corresponding tapped hole on the right side of the angle iron. Connect one end of the base mount to the transmitter group interstack cable "M" to the indicated terminals on E-702 in the left mounting. Run the free end of the cable through the cable clamp on the right side of the angle iron. (See figure 3-13.) Do not tighten this clamp at this time. Pass the free end of cable "M" through the right side gusset entrance and then up through the area between the right side panel and the mounting structure. Slide the two mountings into their approximate positions so that the two side panels are adjoining. Feed interstack cable "K" across the floor of the left-hand mounting, through the left side gusset entrance, and then up through the area between the left side panel and the mounting structure. Pass interstack cable "N" through the same clamp holding cable "M." Tighten the clamp, packing the inside of this clamp, if necessary to insure that the clamp fits tightly around cables "M" and "N". Using the Interconnecting Cabling Diagram, figure 3-32, as a guide, make the indicated connection of cable "N" on E-702 in the left mounting.

Each mounting is provided with two ground straps. Ground the mounting by securing the free end of each strap to a clean, unpainted portion of the foundation or ship's bulkhead. Thread the adjustable inserts in or out until the space between the two mountings is 3/32 inch. Then secure each mounting to the bottom shock mounts with the 5/8-11 x 1-inch long hex head cap screws and 5/8-inch lock washers provided in the installation kit (items 5 and 6 on figure 3-25). Using the 5/16-18 x

2-inch long hex head cap screws, 5/16-inch lock washers, and 5/16-inch nuts provided in the installation materials (items 9, 10, and 11 on figure 3-25), secure the front and rear of the two mountings together.

In the left mounting, lace all the conductors of all cables except the interstack and the coaxial cables entering the left mounting and pass them through the right side gusset entrance, and up through the area between the right side panel and the mounting structure. In the right mounting, lace all the conductors of all cables except the three-phase power cable (R-RT2), the interstack and the coaxial cables entering the right mounting, and pass them through the right side gusset entrance and up through the area between the right side panel and the mounting structure. The three-phase power cable (R-RT2) entering the right mounting should be fed through the left-hand cable slot on the top of the right mounting. Then replace and reconnect the two capacitors, C-701 and C-702, in each mounting.

Remove the five equipment drawers from each of the transmitter group cabinets, by first loosening the captive screws that secure the drawers to the cabinet, using the special wrench mounted on the low voltage power supply front panel. Starting with the top drawer, pull the drawer forward on the rails until a stop on the rail is engaged. Disconnect the connectors of the retractable cabling from the connectors on the drawer. The connector assembly of the retractable cabling has an angle which should be latched on the post that is located on the transmitter group cabinet front above the top drawer, which, in turn, keeps the retractable cabling in its extended position. To complete the removal of the drawer, remove the two machine screws, one on each inner rail, that act as retainers for the latch in case of failure of the latch spring. Depress the latch on each inner rail and pull the chassis forward to clear the projection on the front of the rail.

WARNING

The drawer is now free to be removed entirely from the cabinet. Personnel removing chassis should now be prepared to support the entire weight of the drawer.

Continue to pull the drawer forward until the inner slide disengages from the front rail roller, at which point the drawer will be completely free from the cabinet. Repeat the above process for each succeeding drawer. For all other drawers, the retractable cabling, after it is disengaged from the drawer, is returned to the rear of the cabinet.

Remove the high voltage power supply drawer from its cabinet in the same manner as described for the drawers in the transmitter group cabinet. Resting the front of the cabinet on the front of the right mounting, feed interstack cable "K" coming from the left side of the right mounting into the area of the high voltage power supply cabinet occupied by terminal board E-1404. Feed the three-phase power cable (R-RT2) through the left cable hole in the bottom of the high voltage power

supply cabinet. Feed interstack cables "H" and "J" coming from the right side of the right-hand mounting, through the area between the right side panel of the high voltage power supply cabinet and its structural members and into the cabinet through the right side entry. Feed interstack cables "L" and "P" and the incoming cables, coming from the right side of the right-hand mounting, through the area between the high voltage power supply cabinet right side panel and the cabinet structure, and out of the top of the cabinet. Lower the cabinet into place so that all aligning tabs are inside the side panels. Secure the cabinet to the mounting with the 1/2-13 x 1-inch long hex head cap screws and 1/2-inch lock washers (items 7 and 8 on figure 3-25) provided in the installation material box. Remove two adjustable inserts (item 14 on figure 3-25). Thread an insert into each of the tapped holes on the left side of the high voltage power supply cabinet.

Remove the high level radio modulator drawer from its cabinet in the same manner as described for the drawers in the transmitter group cabinet. Resting the front of the cabinet on the front of the left mounting, feed interstack cable "K", coming from the left side of the left mounting, through the area between the high level radio modulator cabinet left side panel and the cabinet structure and out of the top of the cabinet. Feed interstack cable "J", coming from the right side of the left mounting, through the area between the high level radio modulator cabinet and its structural members, and into the cabinet through the right side entry. Feed interstack cables "H", "M", and "P" and the incoming cables, coming from the right side of the left-hand mounting, through the area between the high level radio modulator cabinet right side panel and the cabinet structure, and out of the top of the cabinet. Lower the cabinet into place so that all the aligning tabs are inside the side panels. Secure the cabinet to the left-hand mounting with the 1/2-3 x 1-inch long hex head cap screws and 1/2-inch lock washers (items 7 and 8 on figure 3-25). Feed the high level radio modulator to the transmitter group interstack cable (cable "R") from the high level radio modulator cabinet, through the right side entry, up through the area between the cabinet right side panel and the cabinet structure and out of the cabinet, making sure the cable protrudes far enough to fan out to the transmitter group terminal boards. Lace cable "R" to the other cables passing up the right side of the high level radio modulator.

Secure the four sway mounts (item 18 of figure 3-25) to the bulkhead foundation. Remove the right side panel from the transmitter group cabinet that is to mount on the high voltage power supply cabinet by removing the 22 binding-head machine screws that mount each side panel to the cabinet frame. Remove the expendable base blocks from one of the transmitter group cabinets. Secure one eyebolt (item 12 on figure 3-25) into each of the tapped holes in the top of the transmitter group cabinet. Carefully hoist the cabinet into a position a few inches above the high voltage power supply cabinet.

Taking care to avoid damage to any of the aligning tabs, block the transmitter group cabinet in position. Two coaxial cables terminating in connectors P-609 and P-610 are located, loose, on the bottom of the transmitter group cabinet. Pull these cables, with their connectors, back through the right side entry and drop them down through the area between the right side panel and the cabinet structure, through the corresponding area in the right side of the high voltage power supply cabinet, through the same area in the mounting and into the mounting through the right side gusset entrance. Mate connectors P-609 and P-610 with the corresponding connectors that have been affixed to the incoming cables, using Interconnecting Cabling Diagram (figure 3-32) as a guide. Feed the cables coming out of the top of the right side of the high voltage power supply cabinet into the bottom of the transmitter group cabinet through the cable entry located at the bottom of the right side of the cabinet at the rear. These cables should pass through this entry behind the transmitter group cabinet wiring, which also enters the bottom of the cabinet at this point. Replace the right side panel. Lower the transmitter group cabinet into place on top of the high voltage power supply cabinet. Bolt the two units together with ten 1/2-13 x 1-inch long hex head cap screws and 1/2-inch lock washers (items 7 and 8 on figure 3-25), but do not tighten the bolts completely. Secure the transmitter group cabinet to the bulkhead sway mounts with the 3/8-16 x 1-inch long hex head cap screws and 3/8-inch lock washers (items 19 and 20 on figure 3-25), but do not tighten the screws completely. Thread leveling inserts (item 14 on figure 3-25) into all the tapped holes on the left side of the right transmitter group cabinet. With the exception of leveling inserts, install the second transmitter group in the same manner. The two top inserts on the right-hand transmitter group should be adjusted until the sides of the two transmitter group cabinets are parallel and, if possible, not over 3/32-inch apart. The adjustable inserts used in this equipment permit the two stacks to be joined together mechanically in spite of misalignments arising from manufacturing tolerances. Bolt the two transmitter group cabinets together at the top with two 5/16-inch cap screws, 5/16-inch lock washers, and 5/16-inch nuts (items 9, 10, and 11 on figure 3-25) and tighten. Tighten the cap screws holding the transmitter group cabinets to the bulkhead sway mounts. The remaining inserts in the transmitter group and modulator cabinets should be threaded out until they touch the side wall of the cabinets on the left. If the cap screws securing the booster cabinets to the mounting and the transmitter group are loose enough, a small amount of adjusting is possible by edging the cabinets toward or away from the center line as required. When the spacing between the two stacks is correct, tighten the cap screws holding the booster components to the mountings and the transmitter group cabinets to the booster. Then secure the two stacks together, as shown on section A-A of figure 3-25, with the remaining eight 5/16-inch cap screws, 5/16-inch lock washers, and 5/16-inch nuts

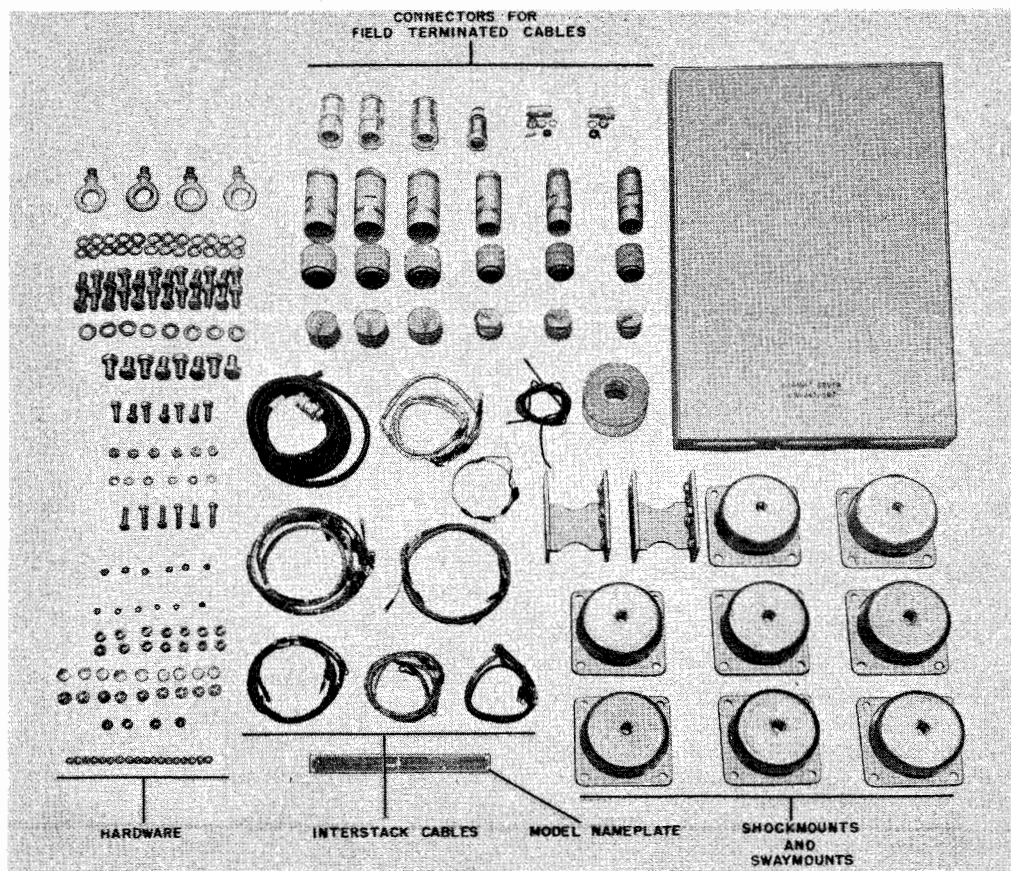


Figure 3-10. Installation Material, AN/SRT-15

(items 9, 10, and 11 on figure 3-25). Remove the four eyebolts from the top of each transmitter group cabinet, but do not replace the top covers until the wiring has been completed. Thread the remaining two leveling inserts (item 16 on figure 3-25) into the left side of the left mounting. Thread the remaining 12 leveling inserts into the left side of the left transmitter group and the left side of the high level radio modulator cabinet. Insert 14 plug buttons (item 17 on figure 3-25) in the leveling inserts. Insert 14 plug buttons (item 15 on figure 3-25) in the holes of the right side of the right transmitter group, high voltage power supply cabinet and mounting.

(4) TRANSMITTER COUPLER CU-402/SRT.—After a suitable location has been found according to paragraph 2a(2) of this section, the only procedure required to mount the Transmitter Coupler CU-402/SRT is to prepare four mounting holes on the bulkhead in accordance with the mounting centers as specified on the Outline Drawing, figure 3-27, and fasten the unit to the bulkhead with the required bolts.

b. ANTENNA TUNING EQUIPMENT.—Outline Drawings, figures 3-28 and 3-29, for the Antenna Coupler CU-372/SRT and Radio Frequency Tuner TN-229/SRT respectively, provide foundation drilling plans

and minimum clearance requirements for mounting these units. Generally it will be found easier to locate the shock mounts on the foundation with the units removed. However, in certain instances of close clearance, it may be found easier to mount the entire unit assembled. There is a soft copper grounding strap in the installation material for each unit. One end of each strap is first attached to the ground stud on the end of each unit. The other end of the strap is to be cleaned and secured to a clean, unpainted portion of the superstructure.

5. WIRING THE EQUIPMENT.

a. GENERAL.—The interstack cables used for the standard adjoining arrangements of the AN/SRT-15 and the AN/SRT-16 transmitter bays are prefabricated at the factory and supplied with the equipment. All other interconnecting cables must be fabricated by the installing technicians, using bulk Navy cables and connectors and accessories supplied with the equipment.

In wiring the various units of the set, the installing technicians should be certain that the following precautions are observed:

(1) The internal cables of the transmitter stacks must clear all high-voltage points and drawer pins.

(2) With the exception of shielded leads, all armor

on cables entering the transmitter stacks must be stripped back to the stuffing tubes.

(3) All coaxial cables must be as short as possible and run clear of all hot or abrasive structures.

(4) No sharp bends shall be made in a coaxial cable. The minimum bending radius of 2-1/2 inches for RG-54A/U must be observed.

(5) All wires must approach terminal boards directly, without undue looping.

If the procedure outlined in the assembly section has been followed, the transmitter group interconnecting cables have already been stripped of armor and sheath, laced together and fed into their respective cabinets. The interconnecting wiring diagrams and following text should be used as a guide in completing the wiring of the individual cabinets.

b. TRANSMITTER BAY.

(1) TRANSMITTER GROUP CABINETS.—The majority of the cables terminating in this unit are connected to the terminal board assembly on the floor of the cabinet. This assembly comprises seven terminal boards, E-601 through E-607, arranged in numerical order from front to rear on the cabinet floor. The entire assembly is covered by a metal plate designed to protect the connecting wires from abrasion or accidental contact. The last terminal board, E-608, is located on the lower left side of the cabinet frame to the left of E-607. All terminal boards are easily accessible if the two lowest drawers (medium voltage power supply and low voltage power supply) are removed from the cabinet.

Remove the metal plate covering the terminal boards, E-601 through E-607. In an AN/SRT-14 or AN/SRT-15 installation, all interstack cables terminating on the cabinet floor should run from the cable slot at the left rear of the cabinet floor, and then forward along the left side of the terminal board assembly, and branch off along the front of the terminal boards to which they are connected. The incoming cables run from the cable slot at the left rear of the cabinet floor forward along the left side of the terminal board assembly and branch off along the front of the terminal boards to which they are connected. In an AN/SRT-16 installation, both interstack and incoming cables that terminate on the cabinet floor enter through the cable entry at the rear right of the cabinet floor. These conductors should run across the floor of the cabinet, behind the terminal board, E-607, and then forward along the left side of the terminal board assembly and branch off along the front of the terminal boards to which they are connected. Using the applicable Interconnecting Cabling Diagram (figure 3-30, 3-31, or 3-32), sort out the conductors according to the terminals to which they connect. As sorting is done, a cross reference list, showing the insulation color code against the wire number designated on the Interconnecting Cabling Diagram for each conductor of each incoming cable, should be made. Trim the length and remove enough insulation from the end of each conductor to expose sufficient bare conductor for a secure connection and attach the terminal lugs (the pre-

fabricated interstack cables are completely assembled with terminal lugs and marker bands for each conductor). Replace the metal plate after all connections have been made to terminal boards E-601 through E-607.

The two connections to terminal board E-608 have been brought into the cabinet at the location of E-608. Remove the cover on E-608 to make the connection. If the prefabricated interstack cables are used, the shields on the individual conductors are terminated in ring terminals that should be grounded to the screw provided below the terminal board. If RG-54A/U cable is used, in place of the prefabricated interstack cable, remove the last three inches of jacket from the cable. Make a hole in the shielding at the point where it leaves the jacket by pushing the individual strand of the braid to each side. Taking care to avoid damage to the insulation, insert a small screwdriver between the shield and the insulated conductor and pull the insulated conductor out through the hole in the shield. Remove sufficient insulation from the end of the conductor and attach lugs to the conductor and to the shield and connect each as specified on the Interconnecting Cabling Diagram. Replace the cover on E-608 after the connections have been made. On an AN/SRT-14 there is no external connection to this terminal board.

The connections to the r-f output connectors, P-609 and P-610, should have been made at the time of assembly (paragraph 4a).

In an AN/SRT-14 transmitter bay installation, two jumpers are required: one on E-606 and the other on E-608. On E-606 place a jumper between terminals 76 and 77, using SRIR-1-1/2(7)-18 hook-up wire. On E-608 place a jumper between terminals 1 and 2, using SRHV-2-1/2(19)-16 high-voltage hook-up wire.

(2) MOUNTING—The connections in the mounting should have been made at the time of assembly (paragraph 4a).

(3) RADIO MODULATOR-POWER SUPPLY.—The terminal boards of the high voltage power supply section of the booster are all located on the floor of the cabinet, with the exception of the high-voltage terminal boards, which are on the rear left of the cabinet frame. The three terminal boards on the floor are numbered E-1401, E-1402, and E-1410, with the high-voltage terminal board numbered E-1404. The high level radio modulator cabinet contains three terminal boards. Of these, the first two terminal boards, E-1406 and E-1407, are located on the floor of the cabinet, arranged in numerical order from front to rear. The high-voltage terminal board, E-1408, is mounted on the rear left of the cabinet frame.

In the high voltage power supply cabinet the three-phase power cable enters the cabinet through the cable hole in the left rear of the cabinet; the interstack cables that terminate on terminal boards E-1401 and E-1402 enter through the cable entry at the rear right of the cabinet. The interstack cable to terminal board E-1404 enters the cabinet at the location of E-1404. Remove the plate covering the terminal boards on the cabinet floor

and the cover on E-1404. Run the three-phase power cable across the rear of the cabinet, and then down the right side of the cabinet, through the cable clamp, to E-1410. Tighten the clamp and prepare the conductors and connect in the same manner as described in paragraph 5b(1). Run the interstack cables terminating at E-1401 and E-1402 forward along the right side of the terminal boards branching off along the front of the terminal boards to which they connect. These cables are fully prepared and need only to be connected to the correct terminals according to the applicable Interconnecting Cabling Diagram. The connections made to E-1404 are made as described for E-608 in paragraph 5b(1). Replace the covers after connections are made.

In the high level radio modulator cabinet the interstack cables are wired in the same manner as prescribed for the high voltage power supply, with the interstack cables, terminating at terminal boards E-1406 and E-1407, entering through the cable entry at the rear right of the cabinet, and the interstack cables, terminating at E-1408, entering the cabinet at the location of E-1408.

(4) TRANSMITTER COUPLER.—There are three interconnecting cable assemblies required to interconnect the transmitter coupler with both the transmitter group and the antenna tuning equipment. (See the three Interconnecting Cabling Diagrams, figures 3-30, 3-31, and 3-32.) One assembly, terminating with P-3315, is supplied with the installation material. The end terminating in the transmitting group cabinet has already been connected (paragraph 5b). The r-f coaxial cable, interconnecting the transmitter coupler with the transmitter group, is made from RG-8/U bulk Navy cable. The transmitting group end of this cable has already been connected (paragraph 4a). An RG-21B/U connector, P-3314, which is found in the installation materials, is assembled to the other end according to the procedure shown on figure 3-12. The remaining interconnecting cable is prepared from RG-18/U bulk Navy cable. The end terminating at the transmitter coupler is assembled to a UG-167A/U connector, P-3308, found in the installation materials, according to the procedure detailed on figure 3-14. The wiring of the antenna tuning equipment (paragraph 5c) covers the connections to the other end of this cable. The interconnections to the transmitter coupler can now be made by mating the connectors with the appropriate receptacle on the transmitter coupler as follows:

- (a) Mate P-3315 with J-3303.
- (b) Mate P-3308 with J-3202.
- (c) Mate P-3314 with J-3201.

c. ANTENNA TUNING EQUIPMENT.—The interconnection of the two components of the antenna tuning equipment, Antenna Coupler CU-372/SRT and Radio Frequency Tuner TN-229/SRT, with each other, with the transmitter group, and with the antenna standoff are made by a set of cable assemblies made from connectors supplied with the installation material and bulk cable taken from Navy stores. Table 3-5 shows the con-

nectors and cable type for each assembly. The Interconnecting Cabling Diagrams (figure 3-30, 3-31, or 3-32) state the critical cable lengths involved. Assemble the UG-154/U connectors according to figure 3-15 and assemble the adapter (CBTL A-2011254) according to figure 3-16. For the multiconductor cable, follow both figure 3-33 and the applicable Interconnecting Cabling Diagram. The cables interconnecting to the transmitter group already have the transmitter group end connected (paragraph 5b(1)). Use the color code cross reference list prepared when these cables were connected to the transmitter group to insure that the connections to the multiconductor connectors will agree with the wire numbers as shown in the Interconnecting Cabling Diagram. When preparing an assembly where both ends of the cable terminate in multiconductor connectors, color code cross references should be prepared to insure that each conductor terminates on the same lettered contact on each end.

With regard to the interconnecting cables between the transmitter bay location and the antenna tuning equipment, assemblies should be prepared after the cables have been run. After all assemblies have been completed, mate the cable connectors to the correct receptacles on the antenna tuning equipment according to table 3-5.

d. REMOTE RADIOPHONE UNIT.—The Interconnecting Cabling Diagrams (figure 3-30, 3-31, or 3-32) show the interconnections between the transmitter group and the remote radiophone unit. The transmitter group end of these connections has been prepared (paragraph 5b(1)). The other end should be prepared with ring terminals for connections to the terminal board of the radiophone unit. Again, a color code cross reference to wire numbers will prove helpful in establishing the correct point-to-point connections. When a large number of equipments are installed, it may be necessary to connect the radiophone unit to a patch panel instead of running a direct line to the transmitter group.

6. MAIN TEST CABLE ASSEMBLY.

Although the rail and slide mechanisms, employed in the Transmitter Group OA-684/SRT and the Radio Modulator-Power Supply OA-685/SRT, permit the chassis of each major unit to be drawn out to give access to the rearmost part of the chassis, there will be circumstances where it will be more practical for purposes of maintenance to withdraw a chassis completely from a cabinet. For such situations a test cable must be used to interconnect the unit on a test bench to the cabinet in which it is normally connected, for purposes of supplying all of the normal voltages and signals required to energize the unit being tested.

This main test cable should be assembled at the time of installation of the equipment, prior to the initial operation, so that the cable will be available for use if the initial check and operation show that corrective maintenance will be required. All the connections, mounting, hardware, etc., required for the preparation of this cable are supplied packed in with the installation

TABLE 3-5. ANTENNA TUNING EQUIPMENT CONNECTOR ASSEMBLIES

| ASSEMBLY DESIGNATION | MATES WITH | CONNECTOR TYPE | ACCESSORIES | CABLE USED WITH | CABLE TERMINATION AT OTHER END |
|----------------------|---------------------|---------------------|---------------------|-----------------------|---|
| P-3301 | J-3502 ANT. COUP. | BENDIX 10-64632-8S | BENDIX 10-35952-321 | MHFA-24 | TRANS. GROUP E-603 through E-607 |
| P-3302 | J-3504 ANT. COUP. | BENDIX 10-64624-28S | BENDIX 10-35952-244 | MSCA-19 | TRANS. GROUP E-602, E-604, E-605, E-606 |
| P-3303 | J-3503 ANT. COUP. | BENDIX 10-64624-28P | BENDIX 10-35952-244 | MSCA-19 | P-3305 |
| P-3304 | J-3501 ANT. COUP. | BENDIX 10-64632-8P | BENDIX 10-35952-321 | MHFA-24 | P-3306 |
| P-3305 | J-302 R-F TUNER | BENDIX 10-64624-28S | BENDIX 10-35952-244 | MSCA-19 | P-3303 |
| P-3306 | J-301 R-F TUNER | BENDIX 10-64632-8S | BENDIX 10-35952-321 | MHFA-24 | P-3304 |
| P-3307 | J-3506 ANT. COUP. | UG-154/U | | RG-18/U | P-3308 |
| P-3308 | J-3202 TRANS. COUP. | UG-167A/U | | RG-18/U | P-3307 |
| P-3309 | J-3505 ANT. COUP. | UG-154/U | | RG-18/U | P-3310 |
| P-3310 | J-303 R-F TUNER | UG-154/U | | RG-18/U | P-3309 |
| P-3311 | W-3502 ANT. COUP. | CBTL A-2011254 | | RG-17/U 1st Extrusion | P-3312 |
| P-3312 | W-301 R-F TUNER | CBTL A-2011254 | | RG-17/U 1st Extrusion | P-3311 |

material. The cable wires required are to be supplied by the Navy at the installation site.

Upon opening the carton containing the cable components, a shipping list drawing (drawing No. NL-901 579-1) and a set of seven other drawings providing assembly information will be found as outlined in table 3-6.

The following assembly procedures have direct references to the above drawings and will contain only as much information as is required to supplement and coordinate the information found on the drawings.

a. PREPARATION OF CABLE.—There are 56 conductors required for the test cable. Drawing NL-901 061-1 is a complete specification for a manufactured cable and can be used as a guide. Paragraph 4.4 of this

specification lists the quantity, sizes, and color codes of the wires required. The specification states that the cable be eight feet long, which length is not critical.

Note

Substitute color coding may be used. However, a cross reference list will be required between the chosen color code and the one appearing in drawing NL-901061-1, as the wiring diagram and cable harness drawings are prepared based on the color code given in NL-901601-1.

Take cable harness drawing NL-901194-14 and divide sheet 1 into two parts by cutting vertically through the drawing where the cable is shown broken. Tack the two portions of this drawing on a board so that the distance

TABLE 3-6. MAIN TEST CABLE
ASSEMBLY DRAWINGS

| DRAWING NO. | TITLE |
|--------------|---|
| NL-901061-1 | Preliminary Specification for 56-conductor Cable |
| NL-901192-29 | Main Test Cable Assembly (SRT) |
| NL-901193-14 | Wiring Diagram — 56-conductor Test Cable |
| NL-901194-14 | 56-conductor Test Cable — Cable Harness |
| NL-95055-1 | Cable Assembly Instructions for BNC Connectors |
| NL-900711-1 | Cable Assembly Instruction — Type N Connectors |
| NL-983357-1 | Specification for Grounding Shielded Wire |
| NL-983346-1 | General Specification for Wiring Diagram and Cable Drawings |

between the pins is about 22 inches shorter than the length cut for the wires. For instance, if the length of wire cut is nine feet, then the two portions of the drawing should be separated so that the dimensions between the location of the pins is 86 inches (disregard the 96-inch dimension shown on the drawing). This now constitutes a template for making the cable.

Using sheets 2 and 3 of NL-901194 as a guide, lay in the individual wires on the template. For instance, wire No. 1 starts at station #1 on the left side and runs to station #35 on the right side, the excess of length being cut off at station #35. At station #1, the symbol 6W appears, which denotes that there are six wires that begin at station #1 and the running list (sheets 2 and 3) show that these are wires Nos. 1, 3, 4, 6, 7, and 8. Wire #2 is a shielded wire, whose conductor portion starts at station #2 and terminates at station #36. In accordance with note 4 on sheet 1 the shield on this wire terminates at point "A" on the left side and point "N" on the right side. At point "A" a grounding lead is attached to the shield in accordance with drawing NL-983357-1, figure 1, using ferrules according to table A of the cable harness drawing NL-901194-14 sheet 1 (item numbers of ferrules referred to on table A are those items shown on NL-901194-14 sheet 4 that correspond to items 29 through 33 on the shipping list drawing (NL-901579-1)). This grounding lead (wire No. 2A) is then terminated at station #3. Run all remaining conductors and grounding leads in a similar manner as described above.

After all wires have been run, lace together the wires running between the pins. Prepare the ends of all the conductors except the three coaxial cables in accordance with notes 5, 7, and 8 of drawing NL-901194-14 sheet 1. Remove the cable from the harness and either wrap the portion that was between the pins with electrical insula-

ting tape or enclose this portion of the cable in a vinyl tubing of appropriate diameter (approximately 1 inch).

b. PREPARATION OF CONNECTOR ASSEMBLIES.—There are two connector assemblies to be prepared for connection to either end of the cable. Main Test Cable Assembly (SRT) drawing NL-901192-29 shows the over-all assembly of the cable and the two connector assemblies. The various individual items going to make up the assemblies are identified on their containers by the item numbers appearing on the shipping list drawing NL-901579-1. Table 3-7 is a cross reference list between item numbers on the shipping list, NL-901579-1, and item numbers on the assembly drawing, NL-901192-29.

In the assembly procedure that follows, item numbers referred to are those on the assembly drawing, NL-901192-29, unless otherwise noted.

First assemble the box connector (item 10) and the washer (item 29) to the plate (item 3), and thread the cable clamp (item 9) on the box connector. Assemble the three Amphenol Blue Ribbon receptacles (item 14) to the plate with the appropriate hardware.

Note

To mount the end Amphenol receptacle, use tapped spacer (item 7) instead of nut (item 32).

Mount terminal plate (item 11) and tapped spacer (item 34) to the plate. Mount the insulator (item 5) to the cover assembly (item 4), but do not mount the cover assembly to the plate at this time.

Assemble the other box connector (item 10) and washer (item 29) to the box (item 1) and thread the cable clamp (item 9) on the box connector. Mount the spring (item 6) to the box. Assemble the three Amphenol Blue Ribbon plugs (item 13) to the box. Assemble the two chassis connectors (item 15) and the two jack assemblies (item 16) to the box. Mount the terminal plate (item 11) and tapped spacer (item 38) to the box.

c. WIRING AND FINAL ASSEMBLY.—The prepared cable and the two connector assemblies are ready to be united into the final test cable assembly.

Take the end of the cable that has the seven wires (including three coaxial leads) that extend beyond the other wires and feed this end through the cable clamp and box connector mounted in the plate (item 3). Pass the cable through the box connector until the covering on the cable protrudes 1/4 inch beyond the face of the box connector, and then tighten the cable clamp. Feed the seven wires that extend beyond the others through the cable clamp (item 33), and then mount the clamp on the plate. Take lengths of black fiberglass sleeving (item 35 on the shipping list NL-901579-1) and cut into lengths of 1/2 inch. Slip a piece of sleeving over the end of each wire, except the seven long wires, and push the sleeving back on each wire so that the tinned end of each wire is clear of the sleeving. Using the wiring diagram,

**TABLE 3-7. MAIN TEST CABLE ASSEMBLY
CROSS REFERENCE LIST**

| ITEM NO. ON NL-901192-29 | ITEM NO. ON NL-901579-1 | DESCRIPTION |
|-----------------------------|----------------------------|---|
| 1 | 8 | Box (Marking) |
| 2 | 9 | Cover |
| 3 | 10 | Plate (Marking) |
| 4 | 11 | Cover Assembly |
| 5 | 12 | Insulator |
| 6 | 13 | Spring |
| 7 | 14 | Spacer |
| 9 | 16 | Cable Clamp |
| 10 | 17 | Box Connector |
| 11 | 18 | Terminal Plate |
| 13 | 19 | Plug-Amphenol Blue Rib- bon Connector |
| 14 | 20 | Receptacle-Amphenol Blue Ribbons Connector |
| 15 | 21 | Chassis Connector |
| 16 | 15 | Jack Assembly |
| 19 | 43 | Screw — No. 4-40 x 5/16 lg |
| 20 | 44 | Screw — No. 4-40 x 1/4 lg |
| 21 | 45 | Screw — No. 4-40 x 3/8 lg |
| 22 | 46 | Lock washer — No. 4 split |
| 23 | 47 | Nut — No. 4-40 hex |
| 24 | 48 | Screw — No. 6-32 x 5/16 lg |
| 25 | 49 | Lock washer — No. 6 split |
| 26 | 50 | Nut — No. 6-32 hex |
| 27 | 51 | Washer — No. 4 flat |
| 29 | 22 | Washer |
| 30 | 52 | Screw — No. 3-56 NF-2 x 1/4 lg |
| 31 | 53 | Lock washer — No. 3 split |
| 32 | 54 | Nut — No. 4-40 hex |
| 33 | 55 | Cable Clamp |
| 34 | 56 | Tapped spacer, 1/4 x 5/8 lg, 6-32 tap |
| 35 | 57 | Tapped spacer, 1/4 x 3/4 lg, 6-32 tap |
| 37 | 28 | Connector, Plug |
| 38 | 27 | Connector, Panel Jack |
| 39 | 26 | Connector, Plug, Right Angle |
| 40 | 25 | Connector, Panel Jack |
| 41 | 24 | Cap, Plate |
| 42 | 23 | Cap, Plate |

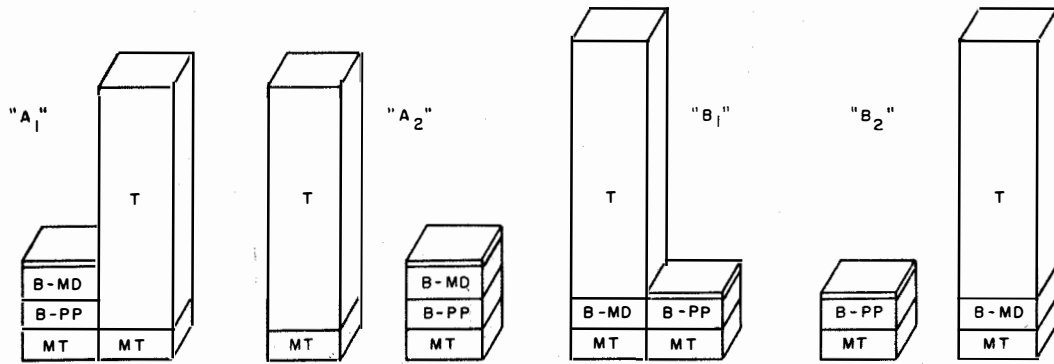
NL-901193-14, as a guide, first cut and mount the two terminal straps (item 34 on the shipping list NL-901579-1), and then make all electrical connections on the plate end of the cable. P-3610 and P-3611 (item 41) and P-3612 and P-3613 (item 42) are plate caps. After all connections have been made, push the lengths of sleeving down to insulate the connections. Attach marker bands as per the wiring diagram, NL-901193-14. Mount the cover assembly (item 4) to the plate (item 3).

Take the other end of the cable and feed it through the cable clamp and box connector mounted on the box (item 1). Pass the cable through the box connector until the covering on the cable protrudes 1/4 inch beyond the face of the box connector and then tighten the cable clamp. Slip a piece of sleeving over the end of each wire terminating on the Amphenol Blue Ribbon plugs. Using the wiring diagram as guide, first cut and mount the two terminal straps, and then make all electrical connections on the box end of the cable. After connections to the Amphenol Blue Ribbon plugs have been made push the lengths of sleeving down to insulate the connections. When wiring and assembling the two panel jack connectors (item 38) to the two small coaxial cables, a voltmeter or buzzer check should be made to the connectors at the other end of these cables to determine which of the connectors is J-3605 and which is J-3606 (J-3605 is connected to coaxial cable that has P-3608 at its other end and J-3606 is connected to coaxial cable that has P-3607 at its other end). Mount the three panel jack connectors, J-3605, J-3606, and J-3607, to the box. Mount the cover (item 2) to the box.

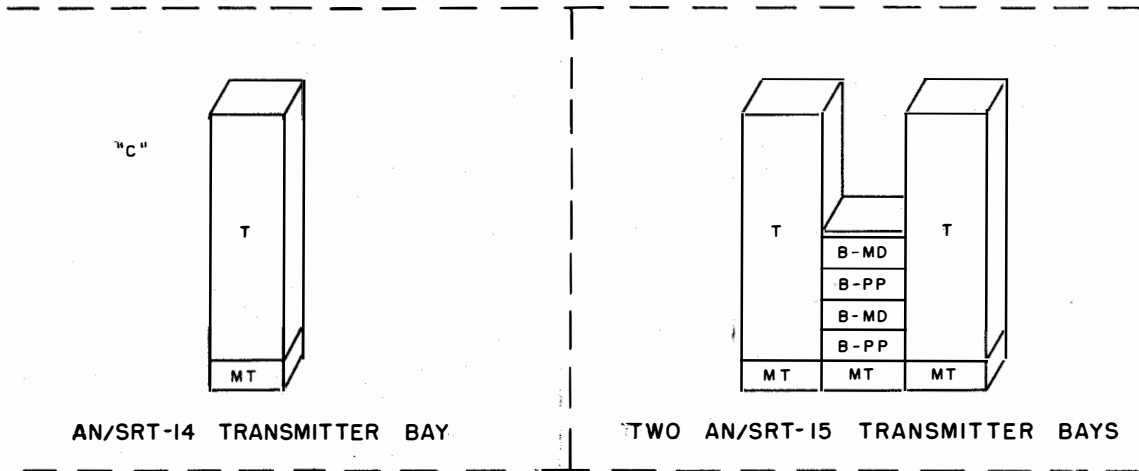
7. INITIAL ADJUSTMENTS.

a. GENERAL.—After the mechanical installation has been completed and all cables properly installed and connected, a series of initial checks and adjustments should be made when energizing the equipment for the first time. Although the equipment may have been previously calibrated and checked, the procedure below will reduce difficulties arising from handling in transit, installation variations, or replacement of critical vacuum tubes. The procedure includes power input adjustments, installation of tubes and fuses, a complete visual inspection, insertion of components, and trial tuning, in the order mentioned.

b. POWER INPUT ADJUSTMENTS.—The transmitter group components of the AN/SRT-14, 15 and 16 are designed for primary power of 110 volts, 60 cycles, single phase only. However, the booster components of an AN/SRT-15 and 16 may be operated from a primary power source of either 220 volts or 440 volts, 60 cycles, three phase. The equipment is normally shipped with all booster links set for 440-volt operation. Using figure 3-17 as a guide, set these link connections on E-1603 (high level radio modulator) and on E-1503, E-1504, and T-1504 (high voltage power supply), according to the primary power being used. The antenna tuning equipment receives its primary power from the transmitter group, which is 110 volts, 60 cycles, single

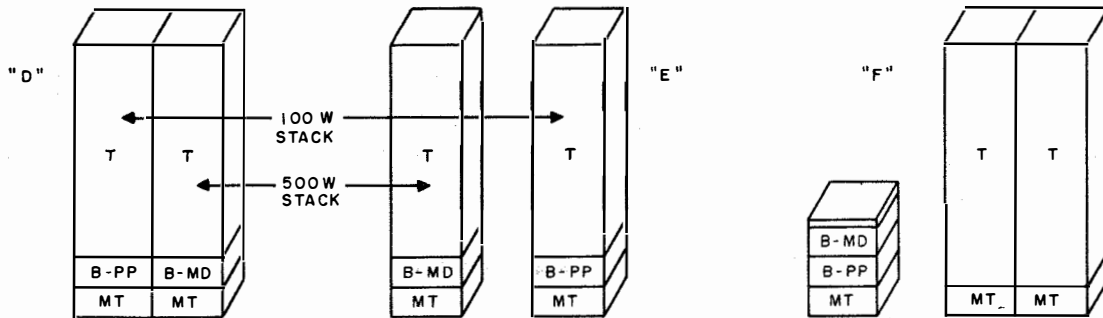


AN/SRT-15 TRANSMITTER BAYS *



AN/SRT-14 TRANSMITTER BAY

TWO AN/SRT-15 TRANSMITTER BAYS



AN/SRT-16 TRANSMITTER BAYS *

MT = MT-1423/SRT

T = OA-684/SRT

B = OA-685/SRT (RADIO MODULATOR-POWER SUPPLY)

MD = MD-230/SRT

PP = 1096/SRT

* IN AN/SRT-15 AND 16 ARRANGEMENTS, POSITIONS OF RIGHT AND LEFT-HAND STACKS MAY BE INTERCHANGED.

Figure 3-11. Typical Transmitter Bay Arrangements

phase. Figures 3-34, 3-35, and 3-36 are the Primary Power Distribution Diagrams for all components of the AN/SRT-14, 15 and 16.

c. CHECKING INDIVIDUAL COMPONENTS.—The tubes for the transmitter bay are normally shipped installed in place in the various major units. Whenever possible, check each tube with a tube tester, then replace each tube in its socket, replacing any that may have been found to be defective. Consult Section 5 of this instruction book for the exact location of each tube. Special care should be taken in installing V-1304, type 4-400A power amplifier tube, in the radio frequency amplifier. Refer to paragraph 3c(2) of Section 5 for the correct handling procedure for V-1304.

In addition to V-1304, the two tubes in the high level radio modulator, V-1601 and V-1602, are packed separately. To install these tubes, first remove the two tube clamps (see figure 3-18) by loosening the two #10-32 binding-head machine screws mounting each clamp to the right side panel of the high level radio modulator. Insert the tubes into the two tube sockets, XV-1601 and XV-1602. Replace the two tube clamps and tighten the #10-32 screws. Connect the lead coming through the front grommet to V-1601 by placing the clip on the end of the lead on the plate cap of V-1601. In a similar manner, connect the lead coming through the rear grommet to V-1602.

Using table 5-6 as a guide, check and replace all fuses in their proper places. The fuses normally supplied for the high voltage power supply in an AN-/SRT-15 or 16 (F-1501 through F-1505) are those required for operation with 440-volt, three-phase primary power. If the primary power to be used is 220 volts, three phase, fuses F-1506 through F-1510 (6.25 amp each) must be drawn from Navy stocks and installed in place of F-1501 through F-1505.

Make a complete visual check of all aspects of each drawer of the transmitter bay. Check carefully for broken parts, loose wires, bent or damaged contacts, loose connectors, or any similar damage that may have occurred either in transit or in the process of installation.

After the visual check is completed, return all units of the Transmitter Group OA-684/SRT to the transmitter group cabinet, mating the connectors of the cabinet wiring to the corresponding connectors on the units. In a similar manner, return units of Radio Modulator-Power Supply OA-685/SRT (booster) (AN/SRT-15 and 16 only) to their respective cabinets.

CAUTION

When replacing the units in the cabinets, replace the retaining screws in the side rails.

d. TRIAL OPERATION.

(1) TRANSMITTER BAY.—Before energizing the transmitter bay for the first time, the r-f connection to the Transmitter Coupler CU-402/SRT should be broken and an external 50-ohm characteristic impedance, 600-watt dummy load, DA-91/U or equivalent, should be

substituted as a load to the radio frequency amplifier output. This is accomplished by disconnecting P-3314 on the RG-8/U cable from J-3201 on the transmitter coupler and coupling the dummy load to P-3314.

Note

The following trial operation procedures will designate the indications to note when the equipment is functioning properly. If, at any step in the operation, the proper indication is not found, reference to Section 7 of the instruction book should be made for correction of trouble.

After primary power has been applied to the equipment, the first indication of normal operation is that the three HEATER ON indicators on the radio frequency oscillator should come on, indicating that heaters in the three critical oscillator circuits in the radio frequency oscillator are energized. Allow a minimum of one hour after the heaters are first energized before the first step in the trial operation takes place to allow these critical circuits to reach the ambient temperature at which they are designed to work.

(a) 100-WATT OPERATION.—The transmitter group may now be energized. Throw the low voltage power supply EMERGENCY SWITCH (⊕) to the ON position. Set STANDBY-OPERATE switch (Ⓢ) in the STANDBY position. Depress the START push button of the MAIN POWER switch (Ⓜ). Listen for the sound of the blower in the radio frequency amplifier. The MAIN POWER indicator light on the low voltage power supply and 250 V.P.S. on the low level radio modulator should be lit at this time. The low voltage power supply has an approximate 25- to 30-second time delay, after which the TIME DELAY, the +250 V and -220 V indicator lights on the low voltage power supply and the 100 W-READY indicator on the radio frequency amplifier should come on. Listen for the blower motors in the mounting at this time.

Open the door on the radio frequency oscillator covering the nine frequency selection knobs. Set the knobs for a frequency of 0.3 mc according to instructions on the panel under the tuning knobs. Set the BAND-SWITCH (Ⓢ) to the proper band setting. Set the TUNE IPA control (Ⓢ), the TUNE PA control (Ⓢ), and the EXCITATION (Ⓢ) at their maximum clockwise setting. Place STANDBY-OPERATE switch (Ⓢ) in OPERATE and set the SERVICE SELECTOR (Ⓢ) on the low level radio modulator to the HAND position. Set LOCAL-REM switch (Ⓢ) on the low level radio modulator at LOCAL. The following indicators should light at this time: 500 V PRI, 500 V OUTPUT and 1300 V OUTPUT on the medium voltage power supply; +300 V on the low voltage power supply and the 100 W-ON on the radio frequency amplifier. Throw the TEST KEY (Ⓢ) on the low level radio modulator to its locking position. With the VOLTMETER-METER SELECTOR (Ⓢ) on the radio frequency amplifier in the RF IN position, the VOLTMETER should read a minimum of 2 volts. If the read-

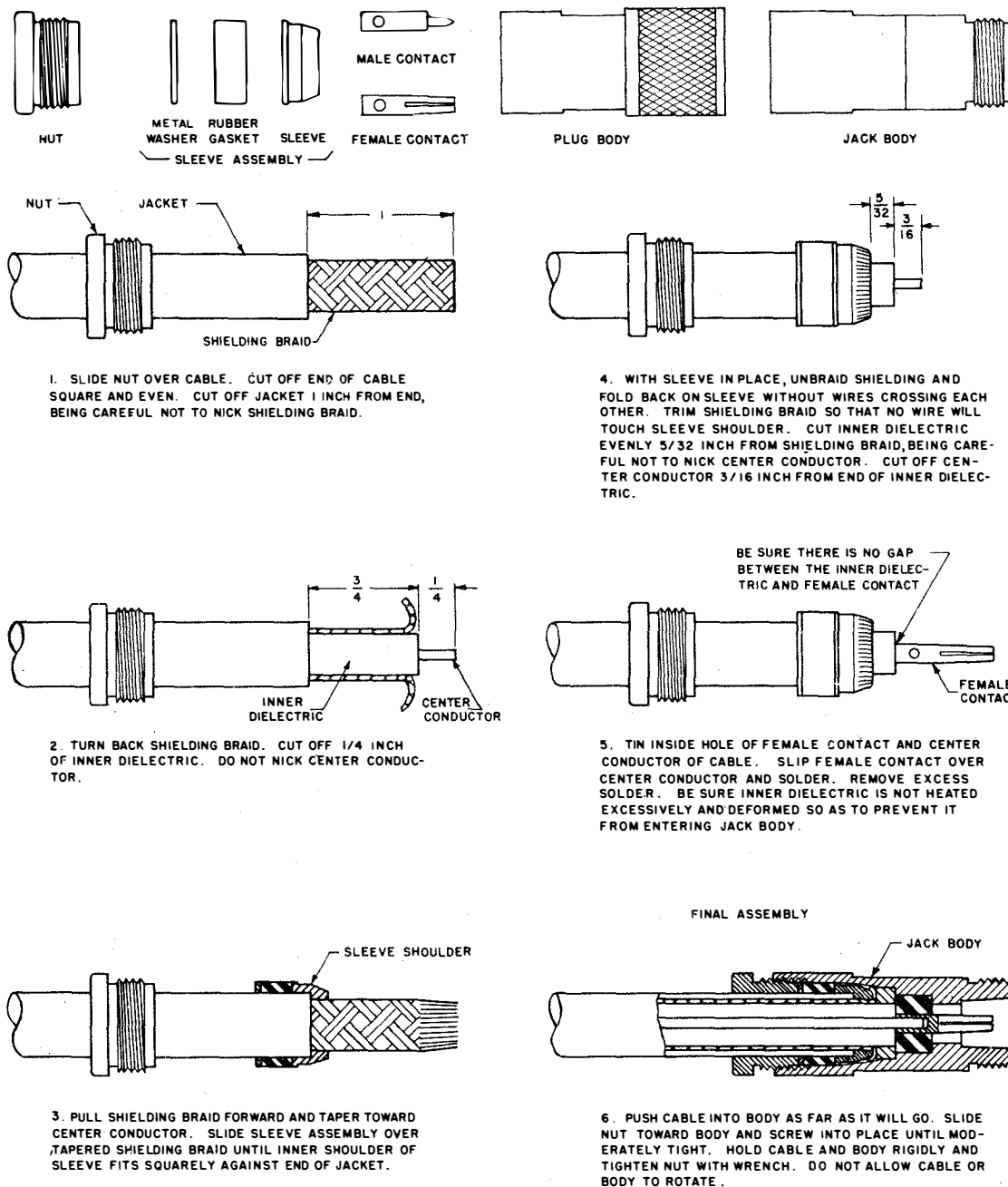


Figure 3-12. Assembly of UG-21B/U or UG-23B/U Connector on RG-8/U Coaxial Cable

3 Section

Paragraph 7 d (1) (a)

NAVSHIPS 92121(A)

INSTALLATION

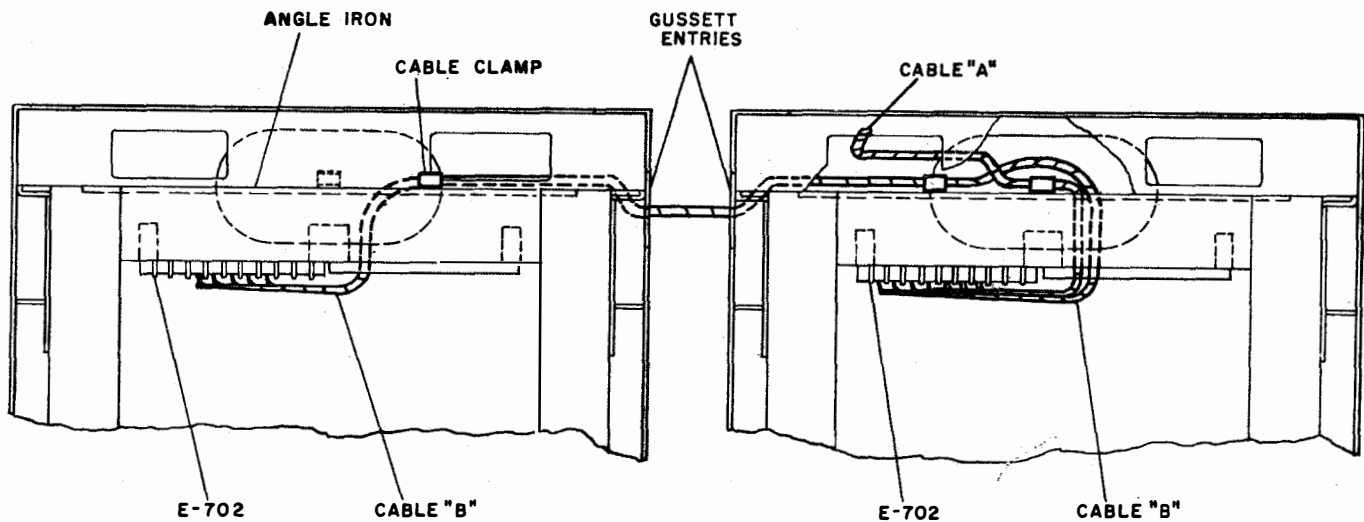
AN/SRT-14, 14A, 15, 15A, 16, 16A

ing exceeds 5 volts, adjust the EXCITATION control Ⓣ to reduce the reading to 5 volts. Set the PA-METER SELECTOR Ⓜ to I_{c1} position and tune the TUNE IPA control Ⓟ counterclockwise until a peak on the PA CURRENT meter is reached. Continue to tune counterclockwise to see if a second peak is recorded on the meter. If there is a second peak set the control Ⓟ at this point but if there is no second peak, return the control Ⓟ to the position of the first peak. Regulate

the TUNE PA control Ⓣ in the same manner, using the ANT CURRENT meter as an indicator of tuning peaks.

This completes a trial operation at the 100-watt level. However, for a complete test of the transmitter group, a frequency in each of the other five tuning bands should be set up and the equipment returned to each (for instance, 1 mc, 6 mc, 10 mc, 18 mc, and 26 mc).

AN/SRT-15



AN/SRT-16

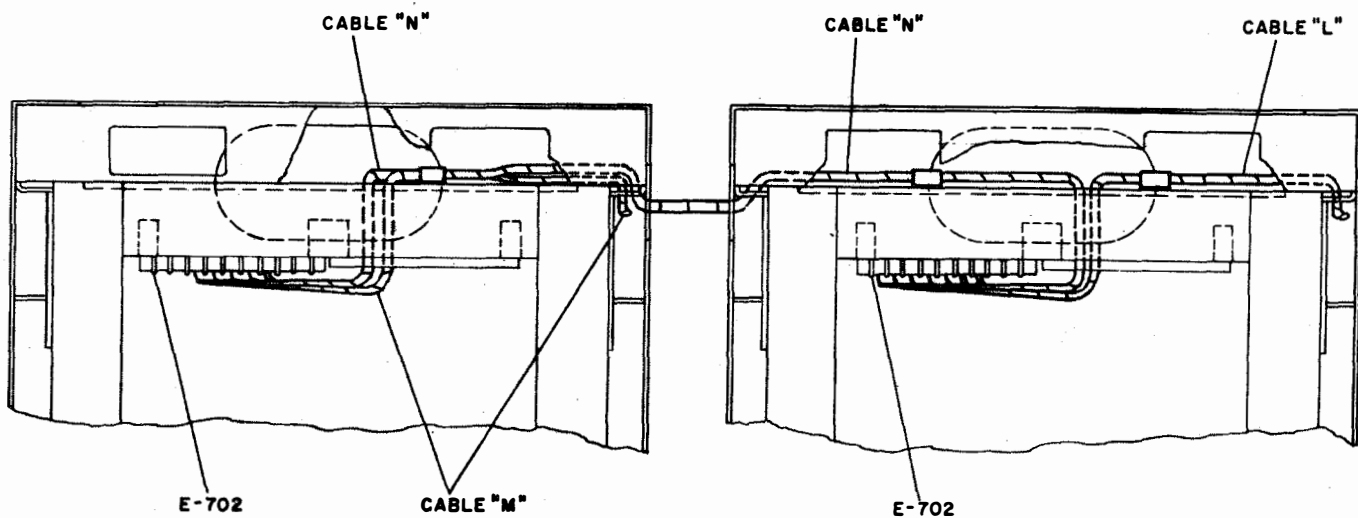


Figure 3-13. Installing E-702 Cables

Note

The highest frequency (26 mc) is obtained by setting the knobs to 25.9999910, with the 10 ~ knob Ⓢ set to the 10 position.

After the 6-mc tuning has been completed, the readings on all positions of the VOLTMETER, IPA CURRENT, PA CURRENT, and ANT CURRENT meters should be checked against the list of typical readings given in the 100-watt column of table 3-8.

TABLE 3-8. TYPICAL METER READINGS AT 6 MC, HAND, KEY DOWN

| METER POSITION | | 100 WATTS | 500 WATTS |
|----------------|--------|-----------|-----------|
| ANT CURRENT | | 1.5 | 3.5 |
| PA | Ic1 | 20 ma | 12 ma |
| | Ic2 | 54 ma | 16 ma |
| | Ik | 0.2 a | 0.2 a |
| IPA | Ic1 | 1.0 ma | 1.0 ma |
| | Ic2 | 7.5 ma | 9.0 ma |
| | Ik | 60 ma | 60 ma |
| VOLT-METER | RF IN | 2.0 V* | 2.0 V* |
| | BIAS | 200 V | 200 V |
| | LV | 260 V | 280 V |
| | MV | 430 V | 470 V |
| | PA Ec2 | 220 V | 400 V |
| | PA Eb | 1100 V | 2800 V |

*Depends upon the setting of the EXCITATION control Ⓣ.

If any difficulty is encountered in tuning to any of the above trial frequencies, first check the radio frequency oscillator drawer. This unit contains a number of tubes that are critical. If any of these tubes have been replaced in the tube testing procedure (paragraph 5c), it may be necessary to readjust the associated circuits according to the procedures given in table 3-9. If adjustments are required, the tuning procedures should be repeated for the transmitter group.

TABLE 3-9. CRITICAL RADIO FREQUENCY OSCILLATOR ADJUSTMENTS

| REPLACED COMPONENTS | REQUIRED ADJUSTMENT PROCEDURES |
|--|--|
| UNIT 1 V-2001 (5654) Y-2001 (XTAL) | With the transmitter in "stand-by", allow crystal ovens to cycle for at least one hour. Tune a receiver (type RBB or equivalent) to 2.5 mc with BFO turned off. Connect the leg of a type "T" BNC connector to the 100 KC X-TAL receptacle on the RFO front panel. |

| REPLACED COMPONENTS | REQUIRED ADJUSTMENT PROCEDURES |
|--|--|
| UNIT 1 V-2001 (5654) Y2001 (XTAL) (cont'd) | Connect a coaxial cable to one arm of the "T" connector and terminate the other end of this cable at the receiver antenna input. Connect a receiving antenna, with a variable attenuator in series, to the other arm of the "T" connector. Adjust the attenuator so that the signal from WWV is at the same level as the 25th harmonic of unit 1 output. Adjust L-2001 on unit 1 for a zero beat indication. This indication should be observed aurally through the receiver speaker and visually by the indication on the OUTPUT meter of the receiver. The indicator on the OUTPUT meter will oscillate about the null; the frequency of this oscillation is the beat frequency. At high beat frequencies the indicator cannot respond and will remain at the null position. As the zero beat is approached, the indicator on the OUTPUT meter will start to oscillate rapidly. Then as tuning towards the zero beat is continued, the oscillation slows down until the zero beat is reached, at which point the indicator rests at the null position. Note Perform the above adjustment only when WWV is not modulating. |
| UNIT 3 V-2501 (6AK6) | Check the interpolation oscillator, operating at 100 kc, against the crystal oscillator as follows: Set KC knob Ⓢ, the 100 knob Ⓣ, and the 10 knob Ⓢ at 9, 9, and 10 respectively. Energize the equipment. Set the ZERO ADJ. control Ⓣ to the INT. OSC. position and, with a screwdriver, adjust the INT. OSC. ZERO ADJ. control, located on the same panel as the frequency selection knobs, so that the shadow angle on the ZERO BEAT INDICATOR reaches zero beat. |
| UNIT 6 V-2203 (5725) V-2204 (5654) V-2205 (6AK6) | Adjust C-2219 as follows: Place 10 KC knob Ⓣ at 9. Connect 10 KC STEP oscilloscope test jack on the radio frequency oscillator to horizontal input of an oscilloscope OS-8/U (or equivalent). Connect the 100 KC X-TAL test jack to the vertical input of the oscilloscope. Rotate C-2219 clockwise until the pattern on the oscilloscope drops out of synchronization. Rotate C-2219 counterclockwise until the pattern just locks in, and mark this spot on the chassis. Continue to rotate C-2219 counterclockwise until pattern again drops out of synchronization. Then rotate C-2219 clockwise until pattern just locks in again and mark this point on the chassis. Finally, set C-2219 midway between the two marks. |

TABLE 3-9. CRITICAL RADIO FREQUENCY OSCILLATOR ADJUSTMENTS (Cont'd)

| REPLACED COMPONENTS | REQUIRED ADJUSTMENT PROCEDURES |
|--|--|
| V-2202 (12AU7) | Adjust R-2210 as follows: Connect 10 KC oscilloscope test jack on the radio frequency oscillator to the vertical input of an oscilloscope OS-8/U (or equivalent.) Connect the 100 KC X-TAL test jack to the horizontal input of the oscilloscope. Adjust R-2210 to obtain a 10-to-1 pattern on the scope. Slowly turn R-2210 counterclockwise until pattern drops out of lock. Mark this point on the chassis. Turn R-2210 clockwise until the pattern locks in again. Continue turning clockwise until the pattern drops out of lock again. Turn R-2210 counterclockwise until pattern again locks in. Mark this point on the chassis. Set R-2210 midway between the two marks. |
| UNIT 8 V-2330 (5725) V-2331 (5725) | Adjust C-2405 and C-2406 as follows: Turn 100 KC control Ⓜ to 9. Connect VTVM, such as a ME-25A/U, to J-2330 on unit 8. Adjust C-2405 and C-2406 for maximum meter reading. |
| V-2327 (5725) V-2328 (5654) V-2329 (6AK6) | Adjust C-2339, located on the top of unit 8, as follows: Set the 100 KC control Ⓜ to 9. Connect the 100 KC STEP oscilloscope test jack to the horizontal input of an oscilloscope OS-8/U (or equivalent) and connect the 100 KC X-TAL test jack to the vertical input of this oscilloscope. A 25-to-1 pattern should appear. Adjust C-2339 in the same manner as described for C-2219 in unit 6. |

An adjustment in the low level radio modulator may be affected by a tube replacement. If it is required to replace the keying multivibrator tube V-1017, then the setting of the ZERO ADJ control, R-1096, should be checked. This is a screwdriver adjustment located behind the UNIT ADJUSTMENTS door on the front panel. First, pull out the low level radio modulator chassis until the rail stop is reached. "Cheat" the interlock S-1104 located on the outside of the chassis left side panel by pushing in the button on the switch. Locate and remove tube V-1018. With a test meter, ME-25/U or equivalent, set at the +100-volt d-c range, measure between pin 1 on tube socket XV-1018 and ground. With the equipment energized and the TEST KEY Ⓣ operated, adjust the ZERO ADJ control, R-1096, to obtain a reading of +25 volts on the meter. Restore the TEST KEY Ⓣ to its normal off position and change the test meter selector from plus to minus; the meter should now read -30 volts \pm 5 volts.

(b) 500-WATT OPERATION.—After the 100-watt trial operation is complete on an AN/SRT-15 or

16, the 500-watt trial should be made. With equipment energized at the 100-watt level, tune to a frequency of 6 mc. After tuning is completed, return the STANDBY-OPERATE switch Ⓟ to the STANDBY position and return TEST KEY Ⓣ to OFF position.

Throw BOOSTER EMERGENCY switch Ⓢ to the ON position. After an approximate 30-second time delay, the time delay indicator should come on. Depress the PUSH FOR 500W push button ⓔ on the radio frequency amplifier. The 500 W READY indicator should come on. With the SERVICE SELECTOR Ⓤ on the low level radio modulator in the HAND position, place the STANDBY-OPERATE switch Ⓟ in OPERATE. The ϕ -1, ϕ -2, and ϕ -3 H.V. PRIMARY indicator on the high voltage power supply, the 3000 v and 350 v SCREEN indicator on the high level radio modulator and the 500 W-ON indicator on the radio frequency amplifier should come on at this time. Throw TEST KEY Ⓣ to KEY ON position. Check meter readings against those shown in table 3-8 under the 500-watt column. If the equipment installed is an AN/SRT-16, the 100-watt trial tuning should be repeated for the second transmitter group.

(c) TRANSMITTER COUPLER CU-402/SRT.—A trial of the Transmitter Coupler CU-402/SRT (load adjusting unit) is next in sequence. For the 100-watt and 500-watt trials, the r-f connection from the transmitter bay to the load adjusting unit was broken and the dummy load inserted. Now disconnect the dummy load from P-3314 on the RG-8/U interconnecting cable and reconnect P-3314 to J-3201 on the load adjusting unit. Disconnect the r-f connector, P-3308, on the RG-18/U interconnecting cable to the antenna tuning equipment from the receptacle J-3202 on the load adjusting unit, and connect the dummy load to J-3202.

Set the INPUT TAP Ⓥ on the load adjusting unit to the 4 position and then energize the transmitter bay as described for the 100-watt trial operation at a frequency of 6 mc (paragraph 7d(1)(a)). Adjusting the OUTPUT TAP Ⓦ at its various settings should cause different readings on the r-f ammeter. The optimum setting of both Ⓥ and Ⓦ should give a reading of approximately 1.5 amp.

(d) REMOTE CONTROL.—If the equipment operates correctly to this point, operation of the remote radiophone unit should be checked. De-energize the equipment by depressing the STOP button on the low voltage power supply. Restore the TEST KEY Ⓣ on the low level radio modulator to its center off position. Set the LOCAL-REM ⓧ switch on the low level radio modulator to REM. Depress the START button on the remote radiophone unit. The POWER indicator on the remote unit should come on together with the indicator on the transmitter group that would come on in the local operation when the START button on the low voltage power supply is depressed (paragraph 7d(1)(a)). With STANDBY-OPERATE switch Ⓟ on the low voltage power supply in OPERATE and the

SERVICE SELECTOR $\text{\textcircled{U}}$ on the low level radio modulator in HAND, patch transmitter to L.O.P. position. Depressing the key should produce the same results at the transmitter bay as were obtained when the TEST KEY $\text{\textcircled{T}}$ was operated in the local trial operation (paragraph 7d(1)(a)). Place the SERVICE SELECTOR $\text{\textcircled{U}}$ on the low level radio modulator in the PHONE position. Insert a phone in the phone jack on the radiophone and depress the press-to-talk switch. This should cause the CARRIER ON indicator on the radiophone to come on and should also energize a carrier at the transmitter bay. Depress the STOP button on the ra-

diophone unit. This should extinguish the POWER indicator and de-energize the transmitter bay.

Place the SERVICE SELECTOR $\text{\textcircled{U}}$ on the low level radio modulator in FSK position. Patch transmitter to TELETYPE position. Depress the START button on the control box at the TELETYPE position. Adjust transmitter for FSK-TT operation; see paragraph 4c. Place key in transmit, on the control box at the TELETYPE position. This should cause the carrier indicator to come on at the transmitter bay. Observe for correct frequency shift operation. Depress the STOP button on the control box at the TELETYPE position. This

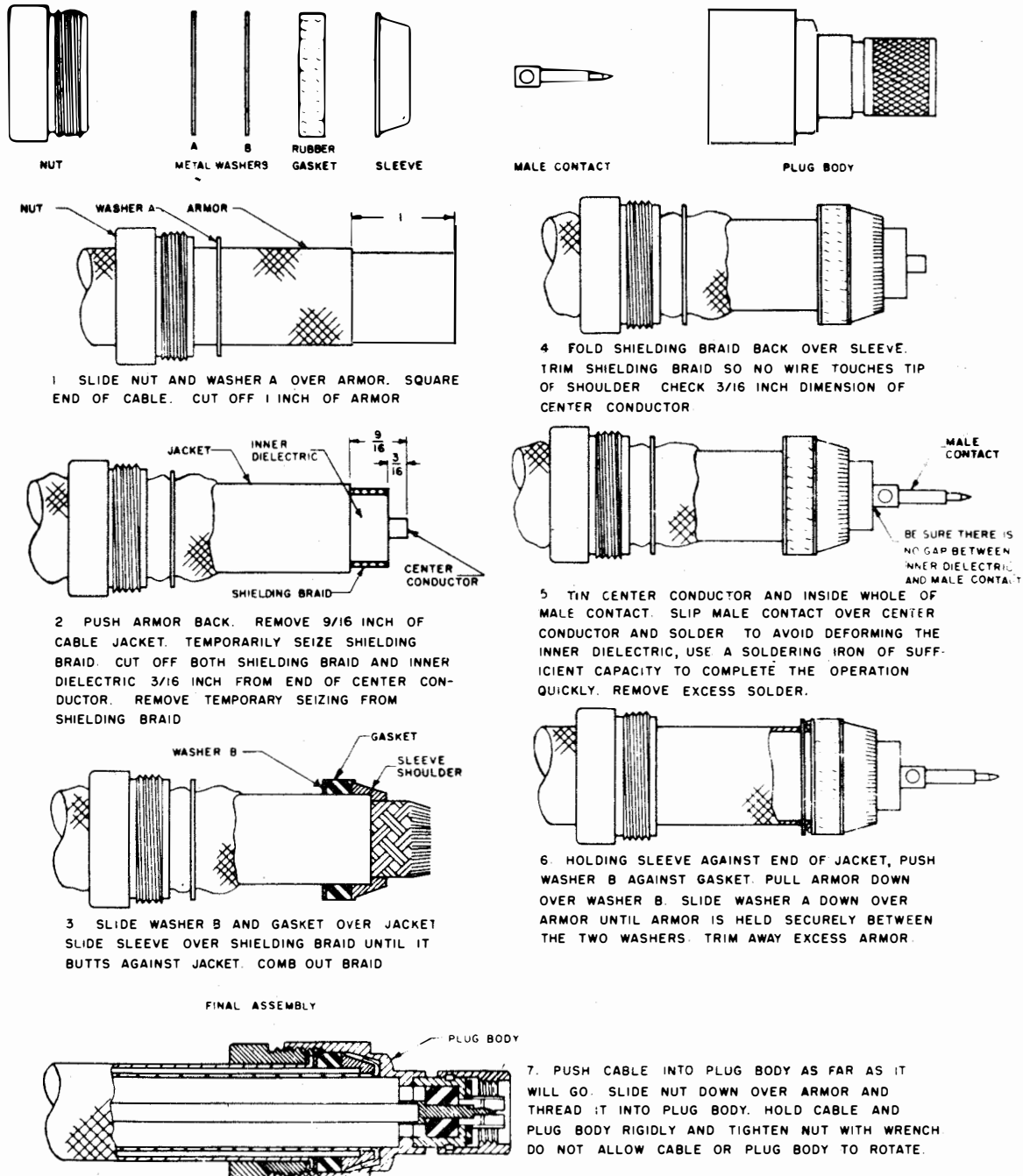


Figure 3-14. Assembly of UG-167A/U Connector on RG-18/U Coaxial Cable

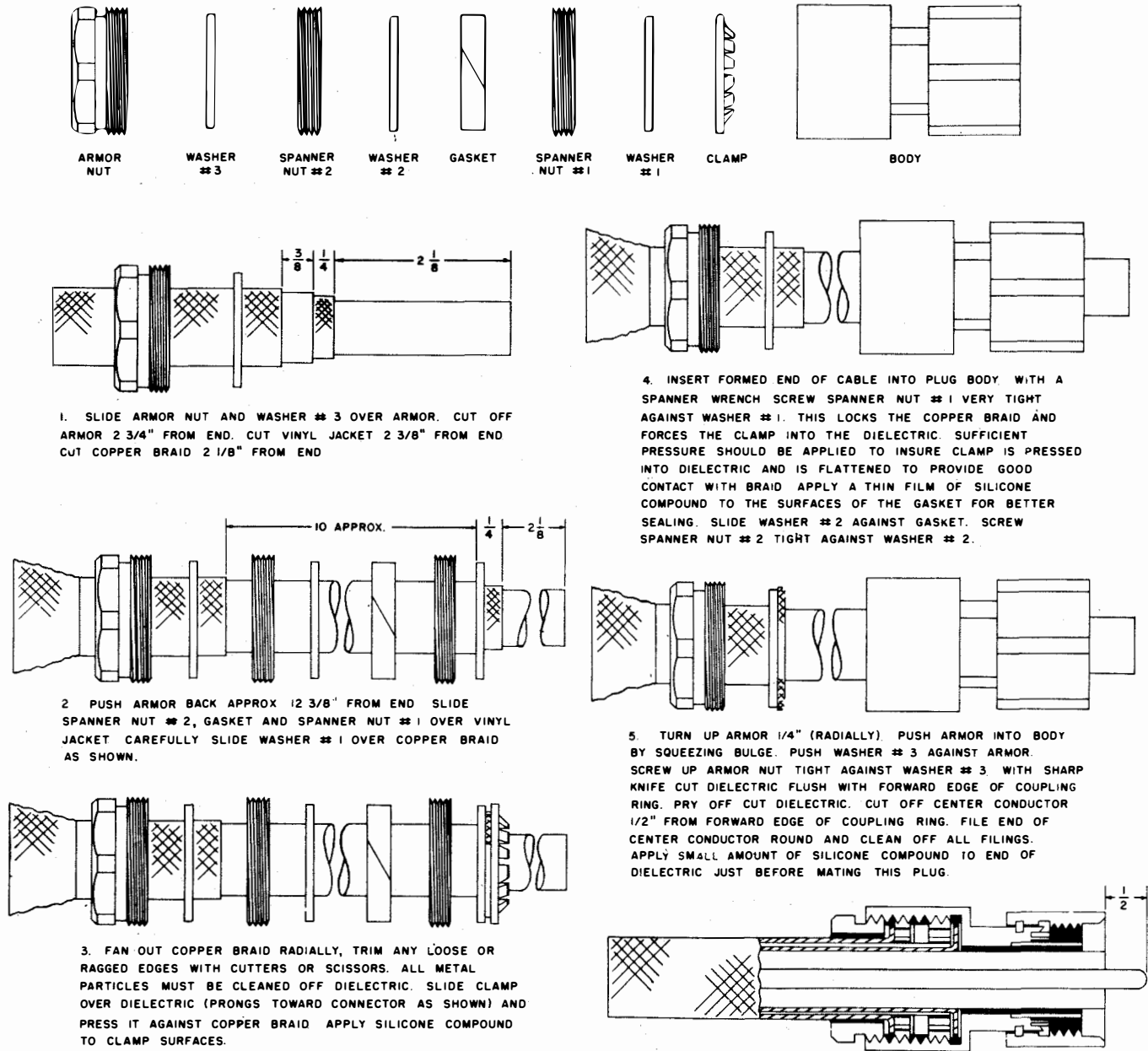


Figure 3-15. Assembly of UG-154/U Connector on RG-18/U Coaxial Cable

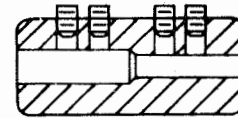
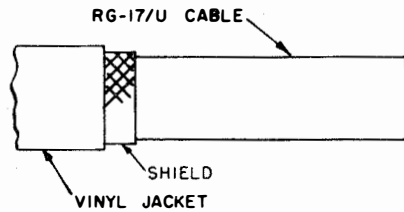
should extinguish the power indicator and de-energize the transmitter bay.

Place the SERVICE SELECTOR (U) on the low level radio modulator in FAX position. Patch transmitter to FACSIMILE position. Depress the START button on the control box at the FACSIMILE position. Adjust transmitter for facsimile operation; see paragraph 4d. Place key in transmit, on the control box, at the FACSIMILE position. This should cause the carrier on indicator to come on at the transmitter bay. Observe for correct frequency shift operation. Depress the STOP button on the control box at the FACSIMILE position. This should extinguish the power indicator and de-energize the transmitter bay.

(2) ANTENNA TUNING EQUIPMENT.—All controls and indicators for the initial trial and adjustment of the antenna coupler and r-f tuner are found on the Control-Indicator C-1352/SRT, which is mounted on the radio frequency oscillator front panel.

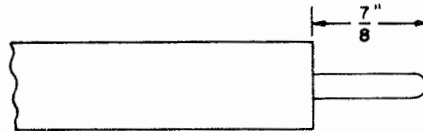
First, the dummy load must be disconnected from J-3202 on the load adjusting unit and the connector, P-3308, on the RG-18/U interconnecting cable, reconnected to J-3202.

(a) PRESSURIZATION.—Before trial operation of the antenna coupler and r-f tuner takes place, a preliminary check of the pressurization of these two components should be made. Each of the two components should be charged with dry nitrogen until a

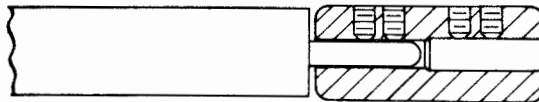


ADAPTER

CBTL A-2011254 WITH
FOUR 6-32 1/4" LG.
HEX SOCKET SET SCREWS

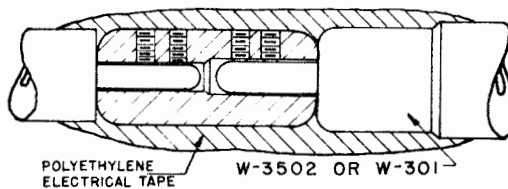


1. FROM REQUIRED LENGTH OF RG-17/U CABLE, PREPARE FIRST EXTRUSION BY REMOVING ENTIRELY THE VINYL JACKET AND THE SHIELD; LEAVING ONLY THE DIELECTRIC MATERIAL AND THE CENTER CONDUCTOR. CUT OFF DIELECTRIC MATERIAL 7/8" FROM THE END, TAKING CARE NOT TO DAMAGE THE EXPOSED LENGTH OF CENTER CONDUCTOR.

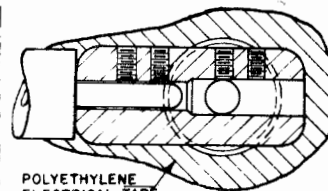


2. SLIDE SMALL DIAMETER HOLE OF ADAPTER OVER CENTER CONDUCTOR OF RG-17/U FIRST EXTRUSION AND TIGHTEN TWO SET SCREWS.

STRAIGHT CONNECTION



RIGHT ANGLE CONNECTION



3. AFTER THE ABOVE ASSEMBLIES HAVE BEEN PREPARED, THE CABLES ARE ATTACHED TO W-3502, W-301 IN ACCORDANCE WITH INTERCONNECTING CABLING DIAGRAMS BY SLIDING EITHER LARGE DIAMETER HOLE OF THE ADAPTER OVER THE EXPOSED CENTER CONDUCTORS OF W-3502, AND W-301, TIGHTENING THE REMAINING SET SCREWS TO FORM EITHER A STRAIGHT OR RIGHT ANGLE CONNECTION. WRAP THE ENTIRE CONNECTION WITH POLYETHYLENE ELECTRICAL TAPE.

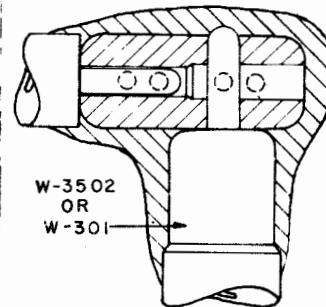


Figure 3-16. Assembly of Adapter (CBTL A-2011254) on RG-17/U First Extrusion Cable

pressure of 20 psi is recorded on each of the pressure gauges. The equipment is supplied charged to the required amount. However, during periods of shipment and storage, all or a portion of the pressurized gas may have leaked out. To pressurize the components, the following typical equipment is required: a cylinder of dry nitrogen; a regulator consisting of a regulator valve, needle valve, delivery pressure gauge and cylinder pressure gauge; a hose with a proper fitting to mate with the regulator at one end and a fitting to mate with the intake valve on the antenna coupler and r-f tuner at the other end. Make the connections to the r-f tuner and/or the antenna coupler as shown on figure 3-19.

If the pressure gauge on the component shows that

there is no pressure in the unit, the unit must first be purged with gas and then charged to the required pressure. If the pressure gauge shows that there is a charge of gas but of insufficient pressure, the unit does not need to be purged before charging to the 20 psi valve. To purge the unit, first close the needle valve on the regulator and then loosen the regulator adjusting screw by turning it clockwise. Open the tank valve on the gas cylinder. Close the adjusting screw until the delivery pressure gauge reads 10 to 15 psi. Note the reading on the cylinder pressure gauge. Open the relief valve on the component by inserting a tool in the hole provided in the relief valve stem and pull the stem against the valve spring tension, holding the stem in this position. Open

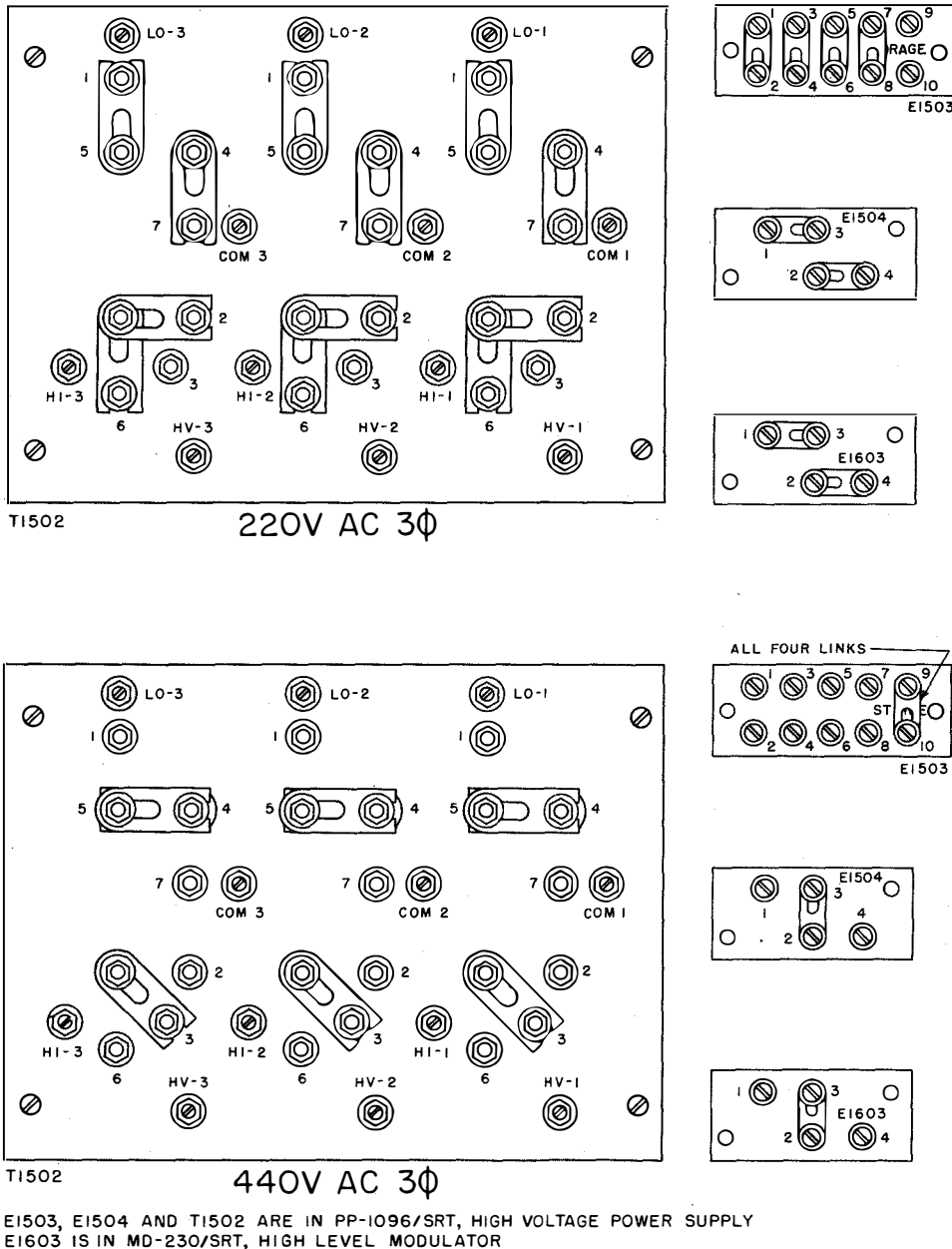


Figure 3-17. Input Power Link Arrangements, Radio Modulator-Power Supply (Booster)

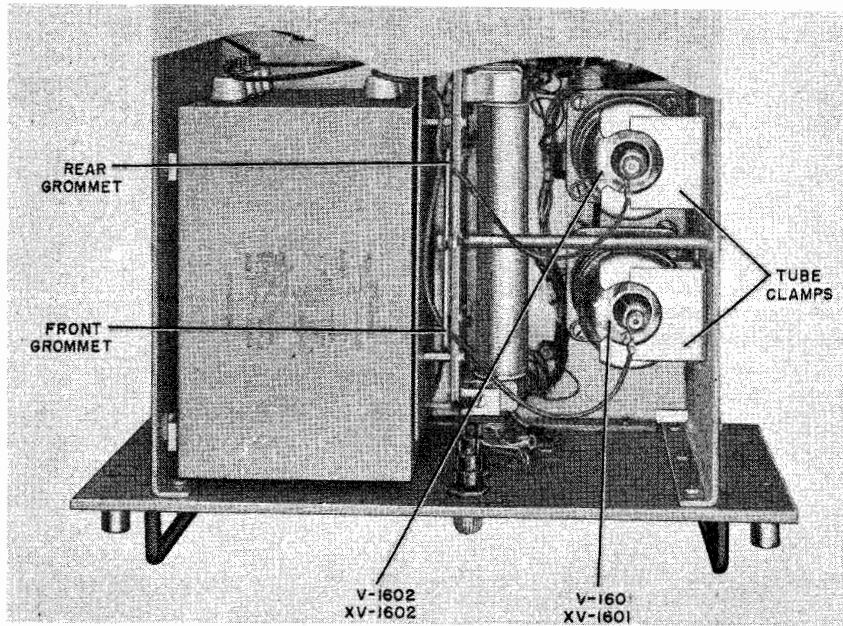


Figure 3-18. Installation of Electron Tubes V-1601 and V-1602

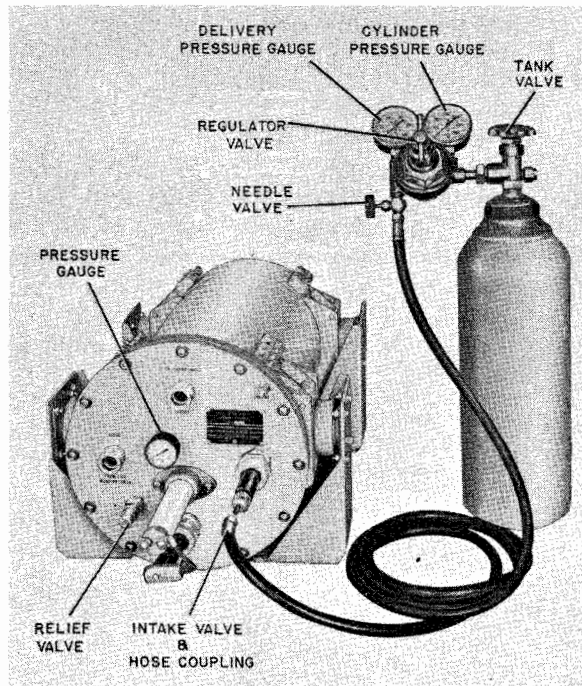


Figure 3-19. Typical Pressurization of Antenna Tuning Equipment

3 Section

Paragraph 7 d (2) (a)

NAVSHIPS 92121(A)

AN/SRT-14, 14A, 15, 15A, 16, 16A

INSTALLATION

the needle valve and purge the component until a drop in gas cylinder pressure of 100 psi is noted, at which time the needle valve should be closed. Release the stem of the relief valve. Open the adjusting screw until the delivery pressure gauge reads 25 to 30 psi. Open the needle valve and charge the component until a reading of 20 psi is read on the pressure gauge on the component, at which time the needle valve on the regulator should be closed. The component is now pressurized; close the tank valve and disconnect the pressurizing equipment. Replace the cap on the intake valve of the unit.

If purging is not required, after the charging equipment is connected, close the needle valve and open the adjusting screw on the regulator. Open the tank valve and close the adjusting screw until the delivery pressure gauge reads 25 to 30 psi. Open the needle valve and charge the component until a reading of 20 psi is read on the pressure gauge on the component, at which time the needle valve on the regulator should be closed. The component is now pressurized; close the tank valve, disconnect the pressurizing equipment, and replace the cap on the intake valve.

(b) TRIAL OPERATION.—Energize the transmitter for 100-watt operation as per paragraph 7d(1) with the exception that the TEST KEY (T) should *not* be operated.

Depress and hold the DOWN push button (AG) on the control-indicator and observe the indicator on the POSITION meter moving down scale. Release the DOWN push button (AG) when the indicator on the POSITION meter stops. Loosen the lock on the ZERO ADJ. control and set this control for a reading of 0 on the POSITION meter. Now depress and hold the UP push button (AF) and observe the indicator on the POSITION meter moving up scale. Release the UP push button (AF) when the indicator on the POSITION meter stops. Loosen the lock on the FULL SCALE ADJ. control and set this control for a reading of 100 on the POSITION meter. As the setting of one of these adjustments slightly affects the other, the above two adjustments should be repeated for the fine setting, after which the two locks should be tight-

ened. Operate the DOWN push button (AG) together with the SLOW push button (AH) and observe the reduced rate of travel of the indicator on the POSITION meter.

If a 35-foot whip antenna is used, select the DIRECT positions on both the TRANSFORMERS (AC) and ANTENNA COUPLER LOADING (AD) controls. Operate the ANTENNA TRANSFER control (AE) to the TUNER IN position and observe that the TUNER IN indicator lights. Depress the UP push button (AF) until the indicator on the POSITION meter reads 100. Set the SWR CALIBRATE control (AB) to 8:1. Operate the TEST KEY (T) on the low level radio modulator and tune the transmitter in the manner outlined in paragraph 7d(1) but to a frequency of 2 mc. Observe the indicator on the SWR BALANCE meter on the control-indicator in the HIGH (red region) portion of the scale. Depress the DOWN push button (AG) watching the SWR BALANCE meter for a dip towards the LOW (green region) portion of the scale. When a dip is found, jog the UP (AF) and DOWN (AG) push buttons to obtain a maximum low indication on the SWR BALANCE meter, moving control (AB) to 4:1 position and then to 2:1 position as the correct tune point is approached. Note that the reading on the POSITION meter, after the low indication has been found on the SWR BALANCE METER, agrees with the approximate value as set forth in the tuning chart located on the under side of the hinged flap, which is mounted on the door covering the frequency selection knobs on the radio frequency oscillator.

If an antenna other than a 35-foot whip is used, follow the step-by-step procedure for initial tuning as described in paragraph 6c of Section 4 of this instruction book.

CAUTION

The ANTENNA COUPLER LOADING CONTROL (AD) *should not* be placed in position c or d when the transmitter is tuned to a frequency above 2.0 megacycles. Operation with control (AD) in position c or d may overheat and destroy coils L-3501 or L-3502 located in the Antenna Coupler CU-372/SRT.

POWER REQUIREMENTS

| INPUT LEAD | INPUT POWER | WATTS | POWER FACTOR | KVA REQUIREMENTS | | | |
|------------|-----------------|-------|--------------|------------------|---------|---------|--------|
| | | | | START | OPERATE | STANDBY | SECURE |
| R-RT1 | 110V, 1Ø, 60CPS | 1400 | 0.92 | 1.70 | 1.50 | *0.87 | 0 |
| R-RT2 | 110V, 1Ø, 60CPS | 71 | 1.0 | ±0.071 | ±0.071 | ±0.071 | ±0.071 |

ALLOWABLE VARIATION: VOLTAGE ±10%, FREQUENCY ±5%.
 * ADD 0.6 KVA OR 600 WATTS TO R-RT1 IF CABINET HEATERS ARE TURNED ON.
 † ADD 0.2 KVA OR 150 WATTS TO R-RT2 WHEN BY-PASS SWITCH ACTUATOR IN ANTENNA COUPLER IS ENERGIZED.

NOTES:

1: RG-17/U FIRST EXTRUSION CABLES MAY BE PREPARED IN THE FIELD FROM BULK RG-17/U OR RG-18/U BY REMOVING THE ARMOR, SLITTING THE OUTER JACKET LENGTHWISE AND REMOVING IT, AND REMOVING THE BRAIDED COPPER OUTER CONDUCTOR COMPLETELY.

2: LOCATE RF TUNER AND ANTENNA COUPLER SO THAT COMBINED LENGTH OF R-RA4 AND ANTENNA LEAD-IN DOES NOT EXCEED 5 FEET.

3: R-RT2 FURNISHES 110 VOLT, 60 CYCLE, SINGLE PHASE POWER TO OVEN HEATERS IN THE RADIO FREQUENCY OSCILLATOR OF THE TRANSMITTER GROUP AND TO THE BY-PASS SWITCH ACTUATOR IN THE ANTENNA COUPLER. THIS CIRCUIT SHOULD BE CONTINUOUSLY ENGAGED. PROTECT THE LINE AGAINST INTERRUPTIONS.

4: MAXIMUM LENGTH OF CABLES R-RT5, R-RT6 AND R-RA2 IS 500 FEET. MAXIMUM LENGTH OF CABLES IR-RC1 AND IR-RC2 IS 1000 FEET.

5: DOTTED ITEMS AND ALL INTERCONNECTING CABLES SHOWN ON THIS DRAWING ARE TO BE FURNISHED BY THE NAVY AT INSTALLATION.

6: RF TUNER AND ANTENNA COUPLER ARE PRESSURIZED WITH DRY NITROGEN GAS AT A PRESSURE OF 20 LBS./SQ. IN.

7: LOCATION OF TRANSMITTER COUPLER IS LIMITED BY LENGTH OF CABLE R-RT4 WHICH EXTENDS 12 FEET FROM CABLE ENTRANCE IN MOUNTING.

8: CABLE R-RT4 IS SUPPLIED WITH THE EQUIPMENT.

9: CONNECTOR P-609 (UG-89/U), LOCATED IN TRANSMITTER GROUP OA-684/SRT, IS SUPPLIED AS A R.F. OUTPUT TO A RECEIVER, INCOMING CONNECTION TO BE FURNISHED AT INSTALLATION.

10: SEE INSTALLATION SECTION OF INSTRUCTION BOOK FOR CORRECT HANDLING OF INCOMING CABLES AFTER ENTRY INTO MOUNTING.

11: ANTENNA LEAD-IN AS SPECIFIED AND PROVIDED BY THE NAVY.

REFERENCE DRAWINGS

| DESCRIPTION | INST. BOOK FIG. NO. | INSTALLATION DRAWING NO. |
|---|---------------------|--------------------------|
| TRANSMITTER BAY, AN/SRT-14 | 3-23 | NL-901312-25 |
| TRANSMITTER COUPLER, CU-402/SRT | 3-27 | NL-901315-12 |
| ANTENNA COUPLER, CU-372/SRT | 3-28 | NL-901316-14 |
| R. F. TUNER, TN-229/SRT | 3-29 | NL-901317-14 |
| TERMINAL BOARD, CABLE ENTRANCE DATA | 3-26 | NL-901318-25 |
| INTERCONNECTING CABLING, AN/SRT-14 | 3-30 | NL-901319-14 |
| CABLE ASSEMBLY INSTRUCTIONS, R. F. CONNECTORS | 3-12, 3-14 | NL-901322-14 |
| CABLE ASSEMBLY INSTRUCTIONS, MULTI-CONDUCTOR CONNECTORS | 3-15, 3-16 | |
| PRIMARY POWER DISTRIBUTION, TRANSMITTER GROUP & MOUNTING | 3-34 | NL-901323-14 |
| PRIMARY POWER DISTRIBUTION, ANTENNA COUPLER & R. F. TUNER | 3-36 | NL-901324-26 |
| | | NL-901326-14 |

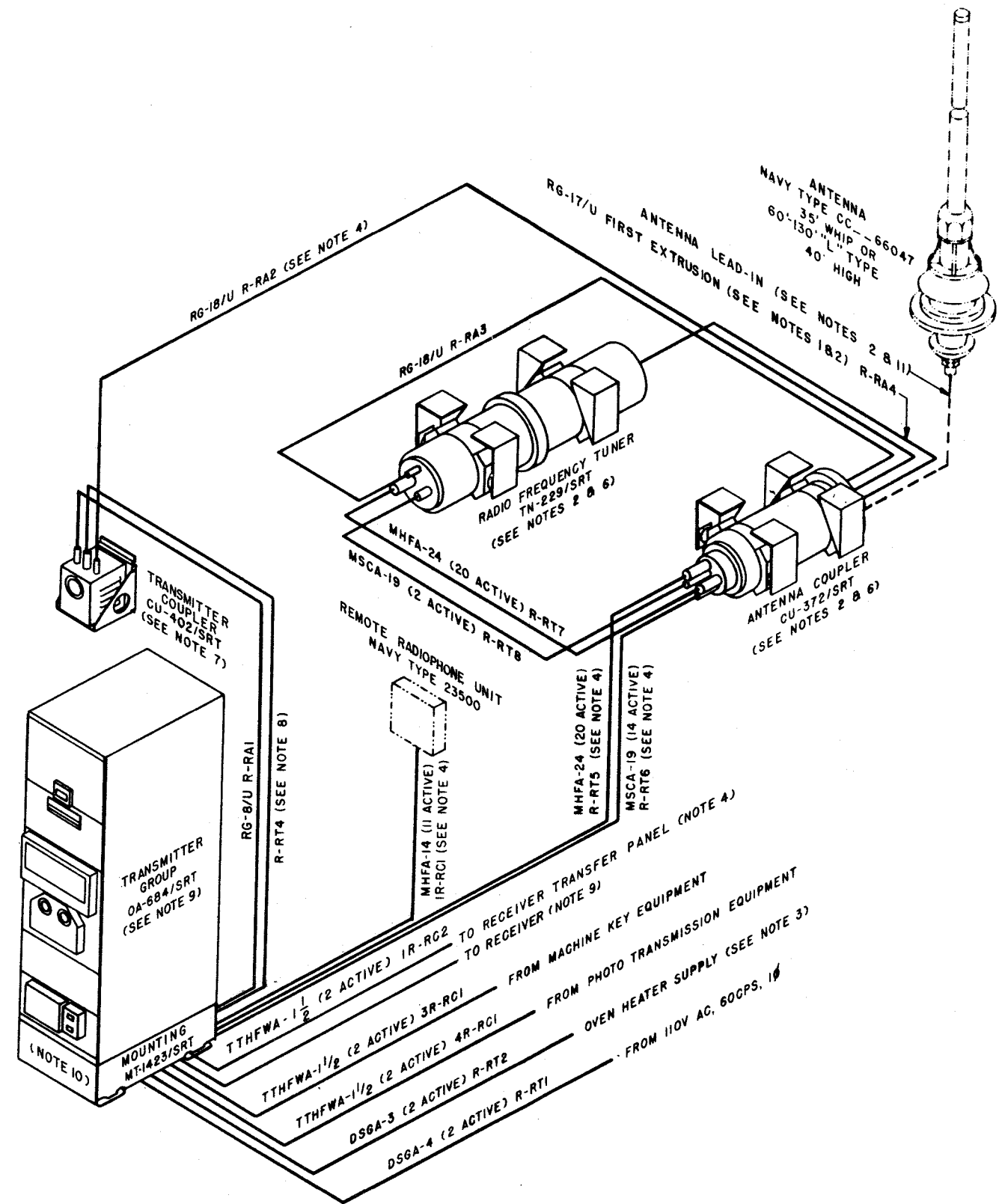


Figure 3-20. Pictorial System Diagram, AN/SRT-14

POWER REQUIREMENTS

| INPUT LEAD | INPUT POWER | WATTS | POWER FACTOR | KVA REQUIREMENTS | | | |
|------------|--------------------|-------|--------------|------------------|---------|---------|--------|
| | | | | START | OPERATE | STANDBY | SECURE |
| R-RT1 | 110V, 1Ø, 60CPS | 1400 | 0.92 | 1.70 | 1.50 | *0.87 | 0 |
| R-RT2 | 220V, 3Ø, 60CPS OR | 2600 | 0.82 | 3.20 | 3.20 | **0.18 | 0 |
| | 440V, 3Ø, 60CPS | | | | | | |
| R-RT3 | 110V, 1Ø, 60CPS | 71 | 1.0 | *0.071 | *0.071 | *0.071 | 0 |

ALLOWABLE VARIATION: VOLTAGE ±10%, FREQUENCY ±5%.
* ADD 1.2 KVA OR 1200 WATTS TO R-RT1 IF CABINET HEATERS ARE TURNED ON.
** ACROSS ONE PHASE OF LINE ONLY.
+ ADD 0.2KVA OR 150 WATTS TO R-RT3 WHEN BY-PASS SWITCH ACTUATOR IN ANTENNA COUPLER IS ENERGIZED.

NOTES:

1: RG-17/U FIRST EXTRUSION CABLES MAY BE PREPARED IN THE FIELD FROM BULK RG-17/U OR RG-18/U BY REMOVING THE ARMOR, SLITTING THE OUTER JACKET LENGTHWISE AND REMOVING IT, AND REMOVING THE BRAIDED COPPER OUTER CONDUCTOR COMPLETELY.

2: LOCATE RF TUNER AND ANTENNA COUPLER SO THAT COMBINED LENGTH OF R-RA4 AND ANTENNA LEAD-IN DOES NOT EXCEED 5 FEET.

3: R-RT3 FURNISHES 110 VOLT, 60 CYCLE, SINGLE PHASE POWER TO OVEN HEATERS IN THE RADIO FREQUENCY OSCILLATOR OF THE TRANSMITTER GROUP AND TO THE BY-PASS SWITCH ACTUATOR IN THE ANTENNA COUPLER. THIS CIRCUIT SHOULD BE CONTINUOUSLY ENGAGED. PROTECT THE LINE AGAINST INTERRUPTIONS.

4: MAXIMUM LENGTH OF CABLES R-RT5, R-RT6 AND R-RA2 IS 500 FEET. MAXIMUM LENGTH OF CABLES IR-RC1 AND IR-RC2 IS 1000 FEET.

5: DOTTED ITEMS AND ALL INTERCONNECTING CABLES SHOWN ON THIS DRAWING ARE TO BE FURNISHED BY THE NAVY AT INSTALLATION.

6: RF TUNER AND ANTENNA COUPLER ARE PRESSURIZED WITH DRY NITROGEN GAS AT A PRESSURE OF 20 LBS/SQ. IN.

7: LOCATION OF TRANSMITTER COUPLER IS LIMITED BY LENGTH OF CABLE R-RT3 WHICH EXTENDS 12 FEET FROM CABLE ENTRANCE IN MOUNTING.

8: CABLE R-RT13 IS SUPPLIED WITH THE EQUIPMENT.

9: CONNECTOR P-609 (UG-89/U), LOCATED IN TRANSMITTER GROUP OA-684/SRT, IS SUPPLIED AS A R.F. OUTPUT TO A RECEIVER, INCOMING CONNECTION TO BE FURNISHED AT INSTALLATION.

10: WHEN STANDARD ARRANGEMENT WITH ADJOINING STACKS IS USED, CABLES R-RT4 THROUGH R-RT11 ARE FURNISHED PREFABRICATED AS UNARMORED INTERSTACK CABLES. FOR ALTERNATE ARRANGEMENTS AND ALL SEPARATED STACK ARRANGEMENTS FABRICATE SUBSTITUTES FROM INDICATED NAVY CABLES OR EQUIVALENTS AS SHOWN ON THE TWO LEFT VIEWS OF THE TRANSMITTER BAY. CABLES NOT DESIGNATED ARE IDENTICAL TO CORRESPONDING CABLES ON ARRANGEMENT "A".

11: MAXIMUM CABLE RUN BETWEEN SEPARATED STACKS SHOULD NOT EXCEED 10 FEET.

12: ALTERNATE ARRANGEMENT MAY BE INSTALLED WITH TWO STACKS ADJOINING. IN ANY AN/SRT-15 ARRANGEMENT, POSITIONS OF RIGHT-HAND AND LEFT-HAND STACKS MAY BE INTERCHANGED.

13: WHEN ARRANGEMENTS "A2" OR "B2" ARE USED TWO ADDITIONAL SHOCK MOUNTS MUST BE ORDERED.

14: SEE INSTALLATION SECTION OF INSTRUCTION BOOK FOR CORRECT HANDLING OF INCOMING CABLES AFTER ENTRY INTO MOUNTING.

15: ANTENNA LEAD-IN AS SPECIFIED AND PROVIDED BY THE NAVY.

REFERENCE DRAWINGS

| DESCRIPTION | INST. BOOK FIG. NO. | INSTALLATION DRAWING NO. |
|---|------------------------|--------------------------|
| TRANSMITTER BAY, AN/SRT-15 | 3-24 | NL-901313-26 |
| TRANSMITTER COUPLER, CU-402/SRT | 3-27 | NL-901315-12 |
| ANTENNA COUPLER, CU-372/SRT | 3-28 | NL-901316-14 |
| R. F. TUNER, TN-229/SRT | 3-29 | NL-901317-14 |
| TERMINAL BOARD, CABLE ENTRANCE DATA | 3-26 | NL-901318-25 |
| INTERCONNECTING CABLING, AN/SRT-15 | 3-31 | NL-901320-25 |
| CABLE ASSEMBLY INSTRUCTIONS, R. F. CONNECTORS | 3-12, 3-14, 3-15, 3-16 | NL-901322-26 |
| CABLE ASSEMBLY INSTRUCTIONS, MULTI-CONDUCTOR CONNECTORS | 3-33 | NL-901323-14 |
| PRIMARY POWER DISTRIBUTION, TRANSMITTER GROUP & MOUNTING | 3-34 | NL-901324-26 |
| PRIMARY POWER DISTRIBUTION, RADIO MODULATOR-POWER SUPPLY | 3-35 | NL-901325-25 |
| PRIMARY POWER DISTRIBUTION, ANTENNA COUPLER & R. F. TUNER | 3-36 | NL-901326-14 |

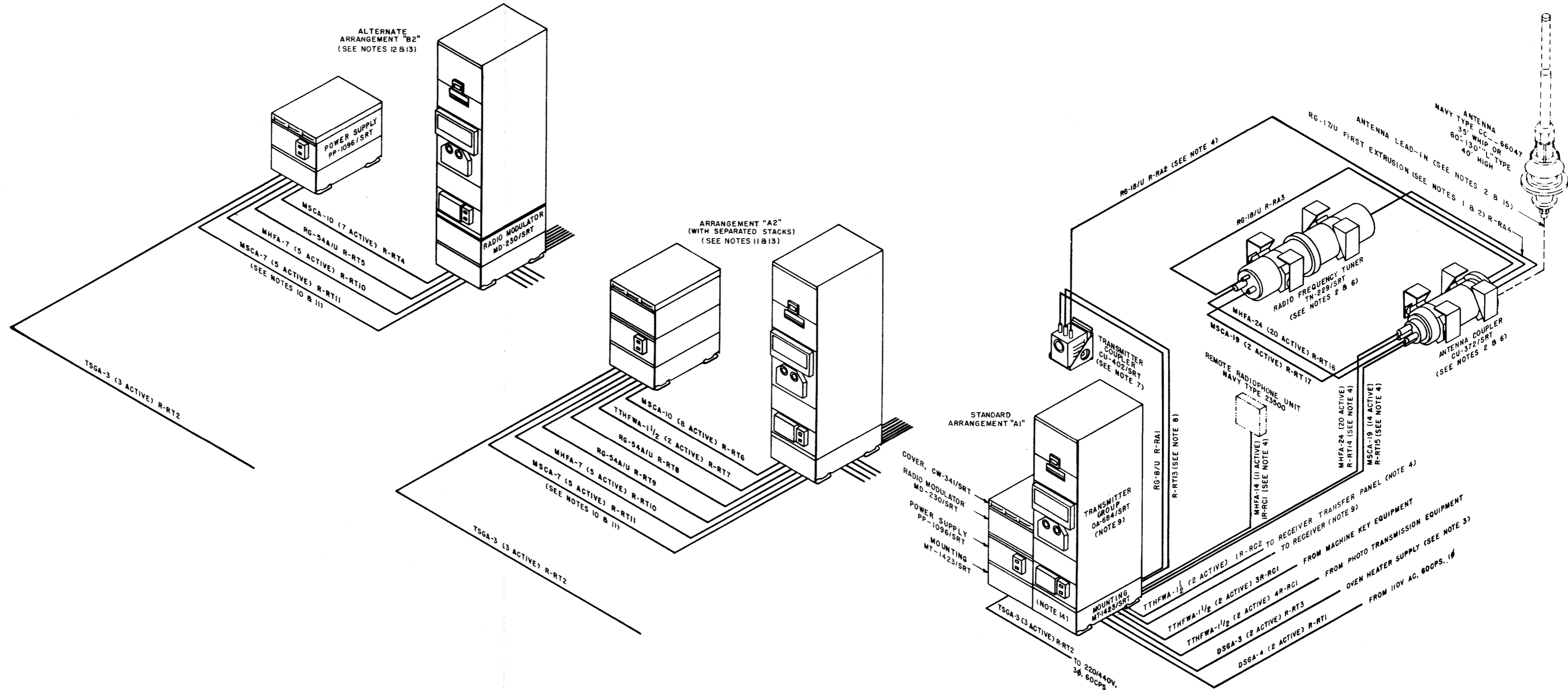
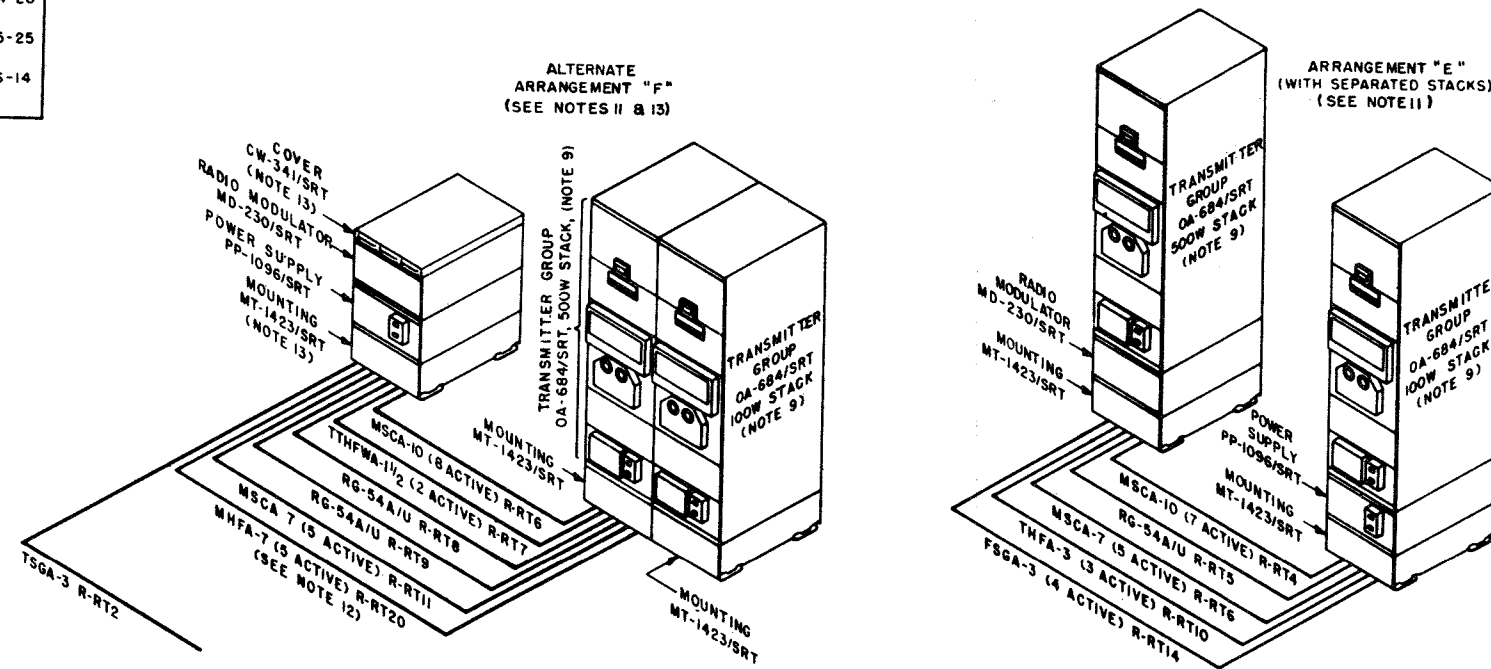


Figure 3-21. Pictorial System Diagram, AN/SRT-15

- NOTES:**
- 1: RG-17/U FIRST EXTRUSION CABLES MAY BE PREPARED IN THE FIELD FROM BULK RG-17/U OR RG-18/U BY REMOVING THE ARMOR, SLITTING THE OUTER JACKET LENGTHWISE AND REMOVING IT, AND REMOVING THE BRAIDED COPPER OUTER CONDUCTOR COMPLETELY.
 - 2: LOCATE RF TUNER AND ANTENNA COUPLER SO THAT COMBINED LENGTH OF R-RA4 AND ANTENNA LEAD-IN DOES NOT EXCEED 5 FEET.
 - 3: R-RT3 FURNISHES 110 VOLT, 60 CYCLE, SINGLE PHASE POWER TO OVEN HEATERS IN THE RADIO FREQUENCY OSCILLATOR OF BOTH TRANSMITTER GROUPS AND TO THE BY-PASS SWITCH ACTUATOR IN BOTH ANTENNA COUPLERS. THIS CIRCUIT SHOULD BE CONTINUOUSLY ENGAGED. PROTECT THE LINE AGAINST INTERRUPTIONS.
 - 4: MAXIMUM LENGTH OF CABLES R-RT16, R-RT17 AND R-RA2 IS 500 FEET. MAXIMUM LENGTH OF CABLES R-RC1 AND R-RC2 IS 1000 FEET.
 - 5: DOTTED ITEMS AND ALL INTERCONNECTING CABLES SHOWN ON THIS DRAWING ARE TO BE FURNISHED BY THE NAVY AT INSTALLATION.
 - 6: RF TUNER AND ANTENNA COUPLER ARE PRESSURIZED WITH DRY NITROGEN GAS AT A PRESSURE OF 20 LBS./SQ. IN.
 - 7: LOCATION OF TRANSMITTER COUPLER IS LIMITED BY LENGTH OF CABLE R-RT15 WHICH EXTENDS 12 FEET FROM CABLE ENTRANCE IN MOUNTING.
 - 8: CABLE R-RT15 IS SUPPLIED WITH THE EQUIPMENT.
 - 9: CONNECTOR, P-609 (UG-89/U), LOCATED IN TRANSMITTER GROUP OA-684/SRT, IS SUPPLIED AS A RF OUTPUT TO A RECEIVER, INCOMING CONNECTION TO BE FURNISHED AT INSTALLATION.
 - 10: WHEN STANDARD ARRANGEMENT WITH ADJOINING STACKS IS USED, CABLES R-RT4 THROUGH R-RT11 AND R-RT14 ARE FURNISHED PREFABRICATED AS UNARMORED INTERSTACK CABLES. FOR ALTERNATE ARRANGEMENTS AND ALL SEPARATED STACK ARRANGEMENTS FABRICATE SUBSTITUTES FROM INDICATED NAVY CABLES OR EQUIVALENTS AS SHOWN ON THE TWO LEFT VIEWS OF THE TRANSMITTER BAY. CABLES NOT DESIGNATED ARE IDENTICAL TO CORRESPONDING CABLES ON ARRANGEMENT "A".
 - 11: MAXIMUM CABLE RUN BETWEEN SEPARATED STACKS SHOULD NOT EXCEED 10 FEET.
 - 12: CABLE R-RT20 IS REQUIRED ONLY WHEN THE ALTERNATE TRANSMITTER BAY ARRANGEMENT IS USED. THE CABLE RUNS FROM TERMINAL BOARD E-702 IN THE MOUNTING UNDER THE POWER SUPPLY PP-1096/SRT TO TERMINAL BOARD E-702 IN THE MOUNTING UNDER THE TRANSMITTER GROUP OA-684/SRT.
 - 13: WHEN THE ALTERNATE TRANSMITTER BAY ARRANGEMENT IS USED A COVER CW-341/SRT AND AN ADDITIONAL MOUNTING MT-1423/SRT AND SIX ADDITIONAL SHOCK MOUNTS (FOUR, IF ALL STACKS ARE ADJOINING) MUST BE ORDERED.
 - 14: CABLES TO 500 W STACK ENTER THROUGH 500W STACK MOUNTING CABLE ENTRANCE.
 - 15: WHEN SIMILAR CABLES SERVE BOTH TRANSMITTER GROUPS AN ADDITIONAL FIGURE IS INSERTED PRECEDING THE CABLE DESIGNATION TO IDENTIFY THE TRANSMITTER GROUP THE CABLE SERVES. E.G.
TRANS. GRP. NO. 2-R-RT1 CABLE DESIGNATION
 - 16: SEE INSTALLATION SECTION OF INSTRUCTION BOOK FOR CORRECT HANDLING OF INCOMING CABLES AFTER ENTRY INTO MOUNTING.
 - 17: ANTENNA LEAD-IN AS SPECIFIED AND PROVIDED BY THE NAVY.

REFERENCE DRAWINGS

| DESCRIPTION | INST. BOOK FIG. NO. | INSTALLATION DRAWING NO. |
|---|---------------------|--------------------------|
| TRANSMITTER BAY, AN/SRT-16 | 3-25 | NL-901314-26 |
| TRANSMITTER COUPLER, CU-402/SRT | 3-27 | NL-901315-12 |
| ANTENNA COUPLER, CU-372/SRT | 3-28 | NL-901316-14 |
| R. F. TUNER, TN-229/SRT | 3-29 | NL-901317-14 |
| TERMINAL BOARD, CABLE ENTRANCE DATA | 3-26 | NL-901318-25 |
| INTERCONNECTING CABLING, AN/SRT-16 | 3-32 | NL-901321-26 |
| CABLE ASSEMBLY INSTRUCTIONS, R. F. CONNECTORS | 3-12, 3-14 | NL-901322-26 |
| CABLE ASSEMBLY INSTRUCTIONS, MULTI-CONDUCTOR CONNECTORS | 3-15, 3-16 | |
| PRIMARY POWER DISTRIBUTION, TRANSMITTER GROUP & MOUNTING | 3-34 | NL-901324-26 |
| PRIMARY POWER DISTRIBUTION, RADIO MODULATOR-POWER SUPPLY | 3-35 | NL-901325-25 |
| PRIMARY POWER DISTRIBUTION, ANTENNA COUPLER & R. F. TUNER | 3-36 | NL-901326-14 |



POWER REQUIREMENTS

| INPUT LEAD | INPUT POWER | WATTS | POWER FACTOR* | KVA REQUIREMENTS | | | |
|------------|--------------------|-------|---------------|------------------|---------|---------|--------|
| | | | | START | OPERATE | STANDBY | SECURE |
| **R-RT1 | 110V, 1Ø, 60CPS | 1400 | 0.92 | 1.70 | 1.50 | *0.87 | 0 |
| R-RT2 | 220V, 3Ø, 60CPS OR | 2600 | 0.82 | 3.20 | 3.20 | **0.18 | 0 |
| | 440V, 3Ø, 60CPS | 2600 | 0.82 | 3.20 | 3.20 | **0.18 | 0 |
| R-RT3 | 110V, 1Ø, 60CPS | 142 | 1.0 | *0.142 | *0.142 | *0.142 | *0.142 |

- ALLOWABLE VARIATION: VOLTAGE ±10%, FREQUENCY ±5%.
 * ADD 0.6KVA OR 600 WATTS TO R-RT1 IF CABINET HEATERS ARE TURNED ON.
 ** ACROSS ONE PHASE OF LINE ONLY.
 * ADD 0.2KVA OR 150 WATTS TO R-RT3 WHEN BY-PASS SWITCH ACTUATOR IN ANTENNA COUPLER IS ENERGIZED.
 ** DATA APPLIES TO LEAD FOR ONE TRANSMITTER GROUP. DOUBLE DATA TO OBTAIN TOTAL FOR BOTH TRANSMITTER GROUPS.

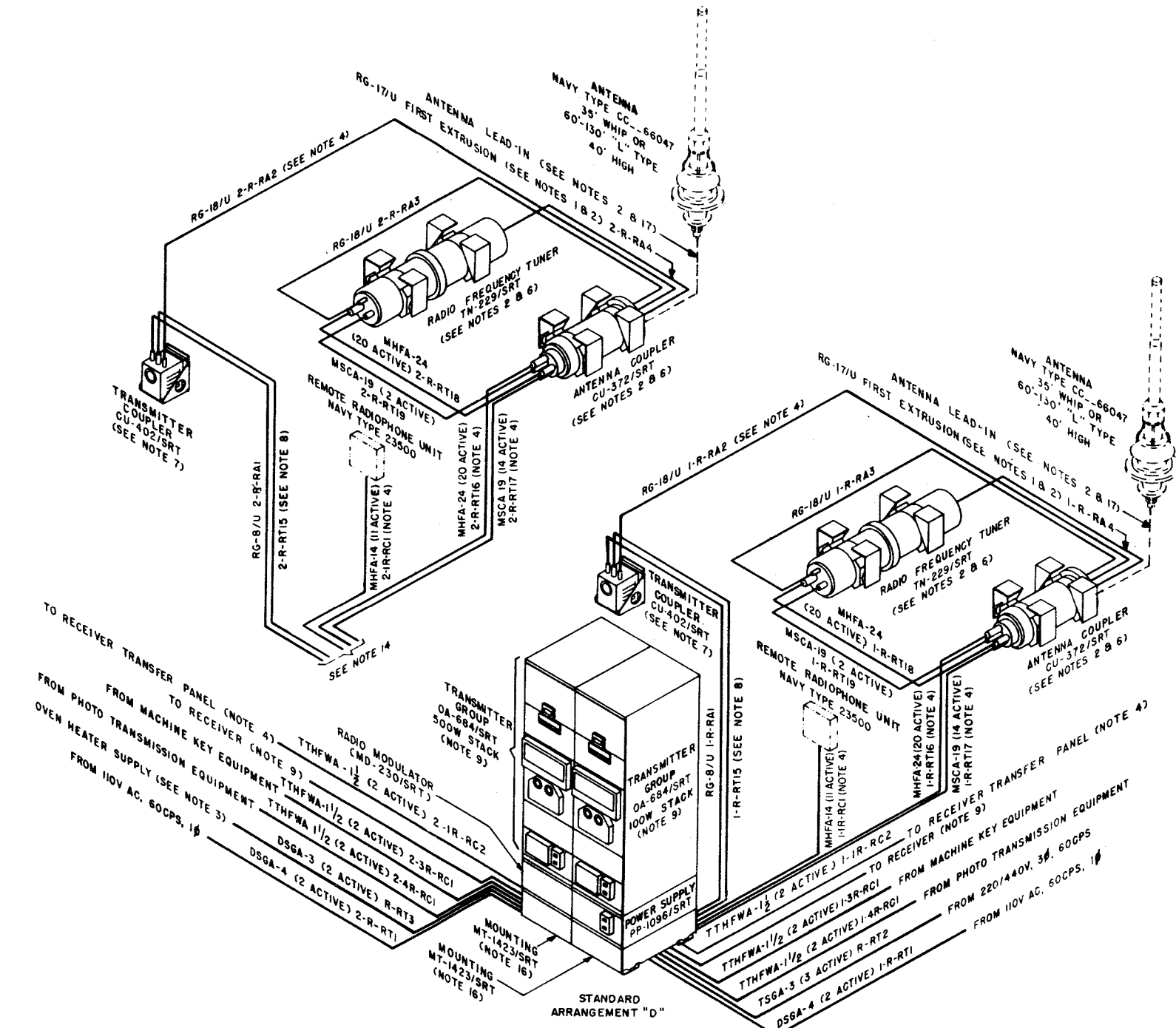


Figure 3-22. Pictorial System Diagram, AN/SRT-16

BILL OF MATERIAL

| AMT REQ. | ITEM NO. | DWG. OR CAT. NO. | DESCRIPTION |
|----------|----------|------------------|---|
| 1 | 1 | NL-982844-2 | TRANSMITTER GROUP OA-684/SRT |
| 1 | 2 | NL-982845-1 | RADIO MODULATOR-POWER SUPPLY OA-685/SRT Consisting of ITEMS 2a & 2b |
| | 2a | | POWER SUPPLY SECT. (PP-1096/SRT & CY-1573/SRT) |
| | 2b | | RADIO MODULATOR SECT. (MD-230/SRT & CY-1572/SRT) |
| 2 | 3 | NL-981791-14 | MOUNTING MT-1423/SRT |
| 1 | 4 | NL-981628-14 | CABINET COVER CW-341/SRT |
| 4 * | 5 | NL-983345-1-1 | SHOCK MOUNT (NO C-4125-TIO THE BARRY CORP.) (NOTE 6) |
| 4 | 6 | NL-983345-1-3 | SHOCK MOUNT (NO C-4300-TIO THE BARRY CORP.) |
| 8 * | 7 | | * 5/8-11 x 1 LG SCREW, CAP, HEX HD, STL ST, TYPE 304 |
| 8 * | 8 | | ** 5/8 NOM x .203 w x .156 THK (MED) WASHER, SPRING-LOCK, STL ST, TYPE 302 |
| 24 | 9 | | * 1/2-13 x 1 LG SCREW, CAP, HEX HD, STL ST, TYPE 304 |
| 24 | 10 | | ** 1/2 NOM x .171 w x .125 THK (MED) WASHER, SPRING-LOCK, STL ST, TYPE 302 |
| 6 | 11 | | * 5/16-18 NC-2 x 1 1/4 LG SCREW, CAP, HEX HD, STL ST, TYPE 304 |
| 6 | 12 | | ** 5/16 NOM x .125 x .078 THK (MED) WASHER, SPRING-LOCK, STL ST, TYPE 302 |
| 6 | 13 | | * 5/16-18 NC-2 NUT, HEX, STL ST, TYPE 303 |
| 6 | 14 | | * 10-32 NUT, HEX, STL ST, TYPE 303 |
| 6 | 15 | | ** 10 (150 NOM) x .062 w x .047 THK (MED) WASHER, SPRING-LOCK, STL ST, TYPE 302 |
| 4 | 16 | NL-983347-1 | EYEBOLT |
| 1 SET | 17 | NL-901206-1 | TRANSMITTER BAY INTERSTACK CABLES AN/SRT-15 (SEVEN HARNESSSES) |
| 14 | 18 | NL-982598-1 | LEVELING INSERT |
| 18 | 19 | | PLUG BUTTON (NO 5117, UNITED CARR PROD.) |
| 4 | 20 | NL-901561-1 | LEVELING INSERT |
| 18 | 21 | | PLUG BUTTON (NO. 48199 UNITED CARR PROD.) |
| 2 | 22 | NL-901559-12 | SWAY MOUNT |
| 8 | 23 | | ‡ 3/8-16 NC-2 x 1 LG SCREW, CAP, HEX HD, STL ST, TYPE 304 |
| 8 | 24 | | ‡‡ 3/8 NOM x .141 w x .094 THK (MED), WASHER, SPRING-LOCK, STL ST, TYPE 302 |

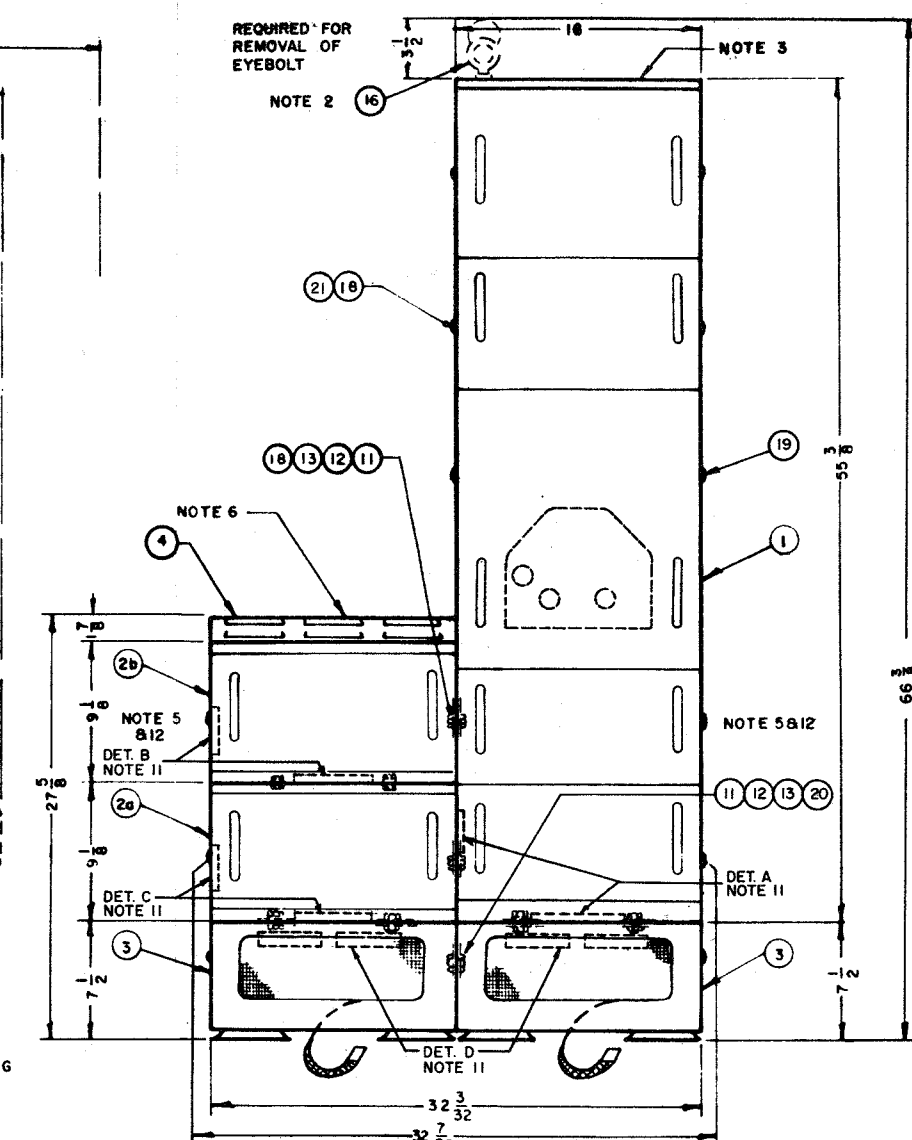
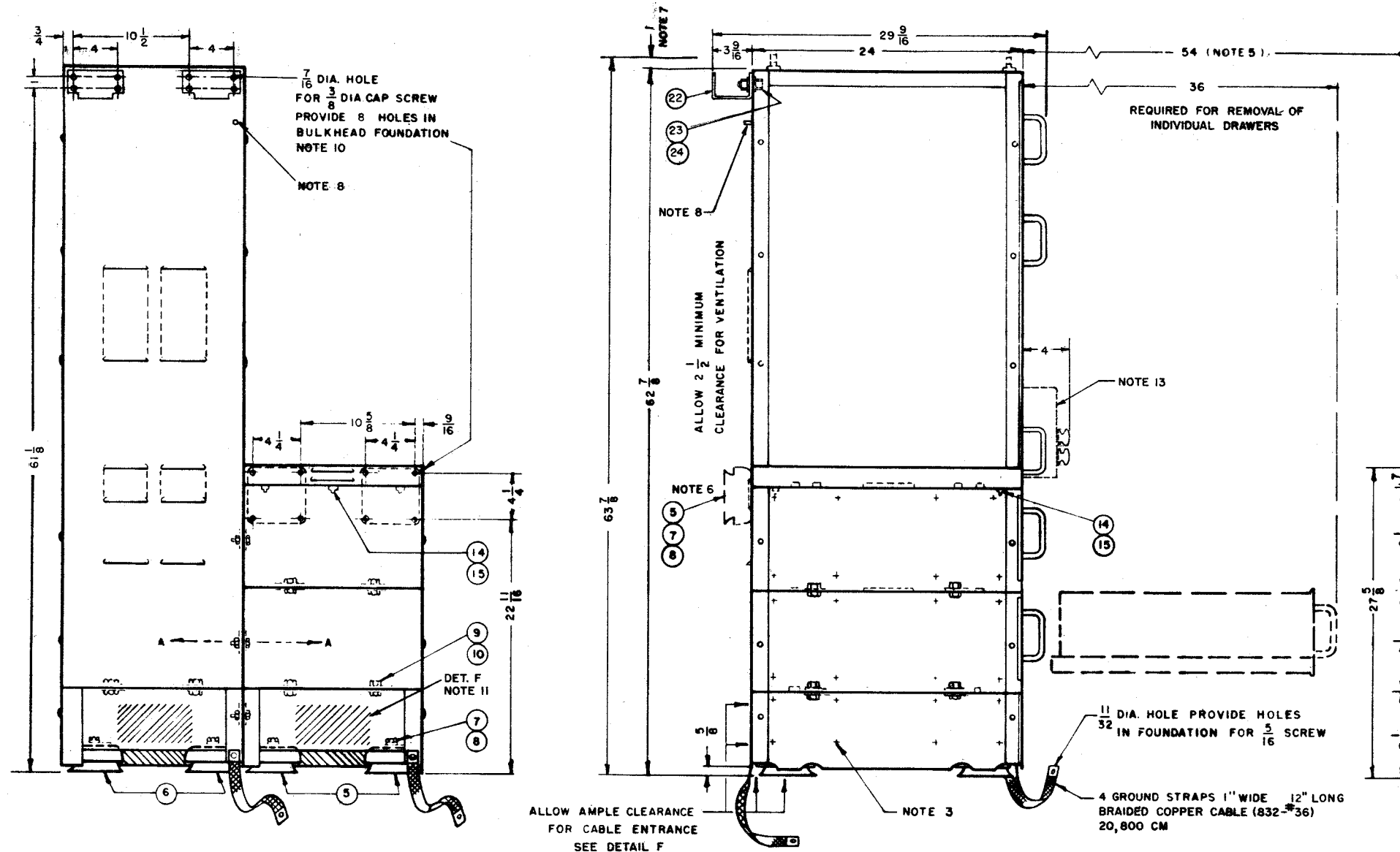
* SEE NOTE 6

‡ PER SPEC. MIL S-933
‡‡ BEST COMMERCIAL QUALITY

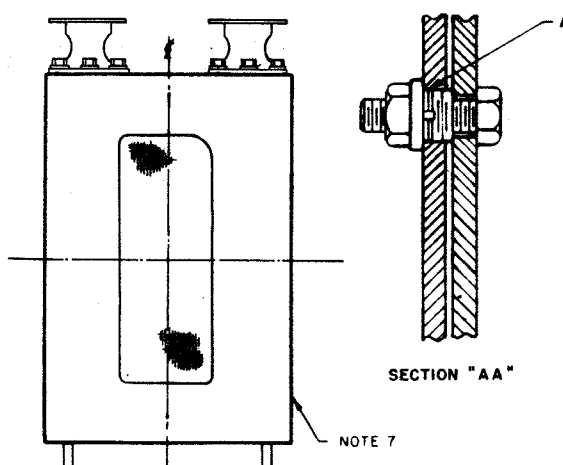
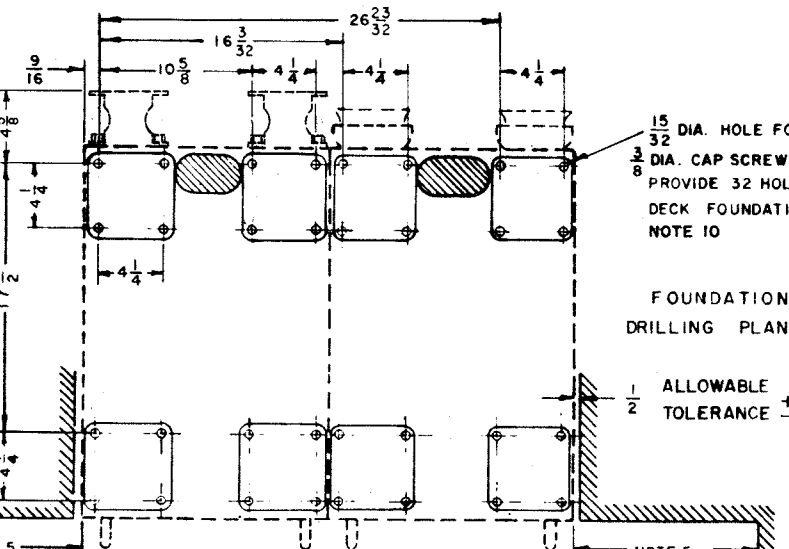
NOTES:

- ALLOW 1/2" CLEARANCE ON ALL SIDES AND TOP FOR EXCURSION OF UNIT ON SHOCK MOUNTS.
- TOP COVER MUST BE REMOVED TEMPORARILY TO ATTACH INSTALLATION EYEBOLTS (ITEM NO 16)
- ALL REMOVABLE PANELS ARE ATTACHED WITH NO. 6-32 X 3/8 LG ROUND HD MACH SCREW & LOCKWASHER
- ITEM NO'S 1, 2, & 3 AND SHIPPED WITH BASE BOARDS TO PREVENT DAMAGE TO ALIGNING TABS ON SIDE PANELS. CAUTION AVOID DAMAGE TO TABS DURING INSTALLATION.
- EQUIPMENT DRAWERS WEIGH FROM 90 TO 140 LBS EACH IN ADDITION TO 36" REQUIRED FOR DRAWER TO CLEAR FRONT OF TRANSMITTER. ADEQUATE STANDING ROOM FOR TWO MEN REMOVING DRAWER MUST BE AVAILABLE CLEARANCES SPECIFIED BELOW ARE MINIMUM REQUIREMENTS, INCREASE WHEREVER POSSIBLE. SELECT EITHER (a) OR (b):
(a) 36" MIN FRONT CLEARANCE; 16" MIN CLEARANCE ON EACH SIDE OF ANY OPEN DRAWER
(b) 54" MIN FRONT CLEARANCE; 4" MIN CLEARANCE ON ONE SIDE OF ANY OPEN DRAWER, 20" ON THE OTHER.
- WHEN DESIRED THE BOOSTER STACK MAY BE INSTALLED SEPARATELY, I.E. DETACHED FROM THE TRANSMITTER STACK. IN THIS CASE THE SUPPLIED INTERSTACK CABLES CAN NOT BE USED AND AN EQUIVALENT SHOULD BE MADE UP IN THE FIELD ACCORDING TO THE INFORMATION ON THE WIRING DIAGRAM. THE CABLE RUN SHOULD NOT EXCEED 10 FEET. WHEN THE BOOSTER STACK IS INSTALLED SEPARATELY TWO TOP REAR SHOCK MOUNTS ARE REQUIRED. FOR A DETACHED INSTALLATION THE FOLLOWING ADDITIONAL MATERIALS ARE REQUIRED AND MUST BE ORDERED; 2 OF ITEM NO 5, 2 OF ITEM NO 7 AND 2 OF ITEM NO.8.
- EACH TOP COVER IS PROVIDED WITH ONE VENT* ALLOW AT LEAST 1 IN CLEARANCE FOR VENTILATION ABOVE COVER.
- DRAIN TUBE FROM DRIP PAN
- POSITIONS OF RIGHT-HAND AND LEFT-HAND STACKS MAY BE INTERCHANGED IF CONVENIENT, USING THE SAME INTERSTACK CABLES, ITEM 17.
- 3/8" CAP SCREWS SUPPLIED BY NAVY.
- FOR DETAILS ON CABLE ENTRANCE AND TERMINAL BOARD LOCATIONS SEE TERMINAL BOARD AND CABLE ENTRANCE DATA DRAWING FIGURE 3-26
- EQUIPMENT CABINETS ARE CRATED WITH EQUIPMENT DRAWERS MOUNTED IN THEM. EQUIPMENT DRAWERS SHOULD BE REMOVED WHILE EQUIPMENT CABINETS ARE BEING INSTALLED FOR EASE OF HANDLING.
- CONTROL-INDICATOR (C-1352/SRT) IS CRATED SEPARATELY. REMOVE PLATE ON RFO FRONT PANEL BEFORE INSTALLING CONTROL-INDICATOR.

THE ABOVE CLEARANCES APPLY WHEN REMOVING THE RADIO FREQUENCY OSCILLATOR (O-275/SRT) DRAWER ONLY IF CONTROL-INDICATOR (C-1352/SRT) HAS BEEN REMOVED FROM RFO FRONT PANEL PRIOR TO DRAWER REMOVAL.



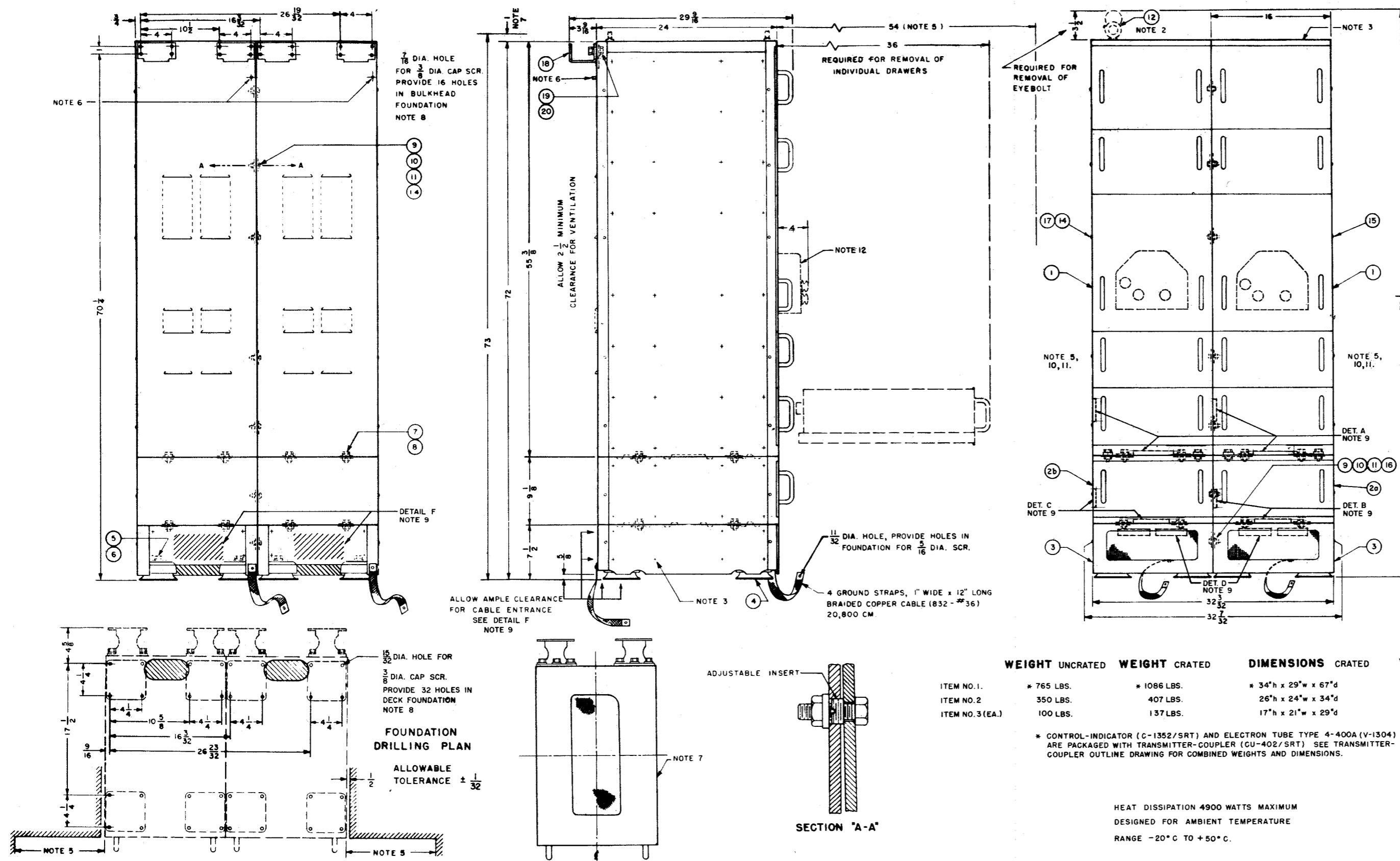
HEAT DISSIPATION 3400 WATTS MAXIMUM
DESIGNED FOR AMBIENT TEMPERATURE
RANGE -20°C. TO +50°C.



| ITEM NO. 1 | WEIGHT UNCRATED | WEIGHT CRATED | DIMENSIONS CRATED | VOLUME CRATED |
|----------------|-----------------|---------------|------------------------|---------------|
| ITEM NO. 1 | * 765 LBS. | * 1086 LBS. | * 34"hx 29"wx 67"d | * 38.2 CU.FT. |
| ITEM NO. 2 | 350 LBS. | 407 LBS. | 26" hx 24" wx 34" d | 12.3 CU.FT. |
| ITEM NO.3(EA.) | 100 LBS. | 137 LBS. | 17" hx 21" wx 29" d | 5.9 CU.FT. |
| ITEM NO.4 | 14 LBS. | ** 135 LBS. | ** 17" hx 21" wx 29" d | ** 5.9 CU.FT. |

* CONTROL-INDICATOR (C-1352/SRT) AND ELECTRON TUBE TYPE 4-400A(V1304) ARE CRATED WITH TRANSMITTER-COUPLER (CU-402/SRT). SEE TRANSMITTER-COUPLER OUTLINE DRAWING FOR COMBINED WEIGHTS AND DIMENSIONS.
** INSTALLATION MATERIAL IS CRATED WITH ITEM NO.4. CRATED DATA INCLUDES BOTH UNITS.

Figure 3-24. Outline Drawing, Transmitter Bay, AN/SRT-15



BILL OF MATERIAL

| AMT. REQ. | ITEM NO. | DWG. OR CAT. NO. | DESCRIPTION |
|-----------|----------|------------------|--|
| 2 | 1 | NL- 982844-2 | TRANSMITTER GROUP OA-684/SRT |
| 1 | 2 | NL- 982845-1 | RADIO MODULATOR-POWER SUPPLY OA-685/SRT Consisting of items 2a & 2b |
| | 2a | | POWER SUPPLY SECT. (PP-1096/SRT & CY-1573/SRT) |
| | 2b | | RADIO MODULATOR SECT. (MD-230/SRT & CY-1572/SRT) |
| 2 | 3 | NL- 981791-14 | MOUNTING MT- 1423/SRT |
| 8 | 4 | NL- 983345-1-3 | SHOCK MOUNT (NO C-4300-T10 THE BARRY CORP) |
| 8 | 5 | | 5/8-11 x 1 LG. SCREW, CAP, HEX HD, STL. ST, TYPE 304 |
| 8 | 6 | | 5/8 NOM. x .203 w x .156 THK (MED) WASHER, SPRING-LOCK, STL. ST, TYPE 302 |
| 36 | 7 | | 1/2-13 x 1 LG. SCREW, CAP, HEX HD, STL. ST, TYPE 304 |
| 36 | 8 | | 1/2 NOM. x .171 w x .125 THK (MED) WASHER, SPRING-LOCK, STL. ST, TYPE 302 |
| 14 | 9 | | 5/16-18 NC-2 x 1 1/4 LG. SCREW, CAP, HEX HD, STL. ST, TYPE 304 |
| 14 | 10 | | 5/16 NOM. x .125 w x .078 THK (MED) WASHER, SPRING-LOCK, STL. ST, TYPE 302 |
| 14 | 11 | | 5/16-18 NC-2 NUT, HEX., STL. ST, TYPE 303 |
| 8 | 12 | NL- 983347-1 | EYEBOLT |
| 1SET | 13 | NL- 901207-1 | TRANSMITTER BAY INTERSTACK CABLES AN/SRT-16(NINE BARNESSES) |
| 24 | 14 | NL- 982598-1 | LEVELING INSERT |
| 28 | 15 | | PLUG BUTTON (NO. 5117 UNITED CARR PROD) |
| 4 | 16 | NL-901561-1 | LEVELING INSERT |
| 28 | 17 | | PLUG BUTTON (NO. 48199 UNITED CARR PROD) |
| 4 | 18 | NL-901559-12 | SWAY MOUNT |
| 16 | 19 | | 3/8-16 NC-2 x 1 LG. SCREW, CAP, HEX. HD, STL. ST, TYPE 304 |
| 16 | 20 | | 3/8 NOM. x .141 w x .094 THK (MED) WASHER, SPRING-LOCK, STL. ST, TYPE 302 |

* PER SPEC. MIL. S-953
** BEST COMMERCIAL QUALITY

NOTES:

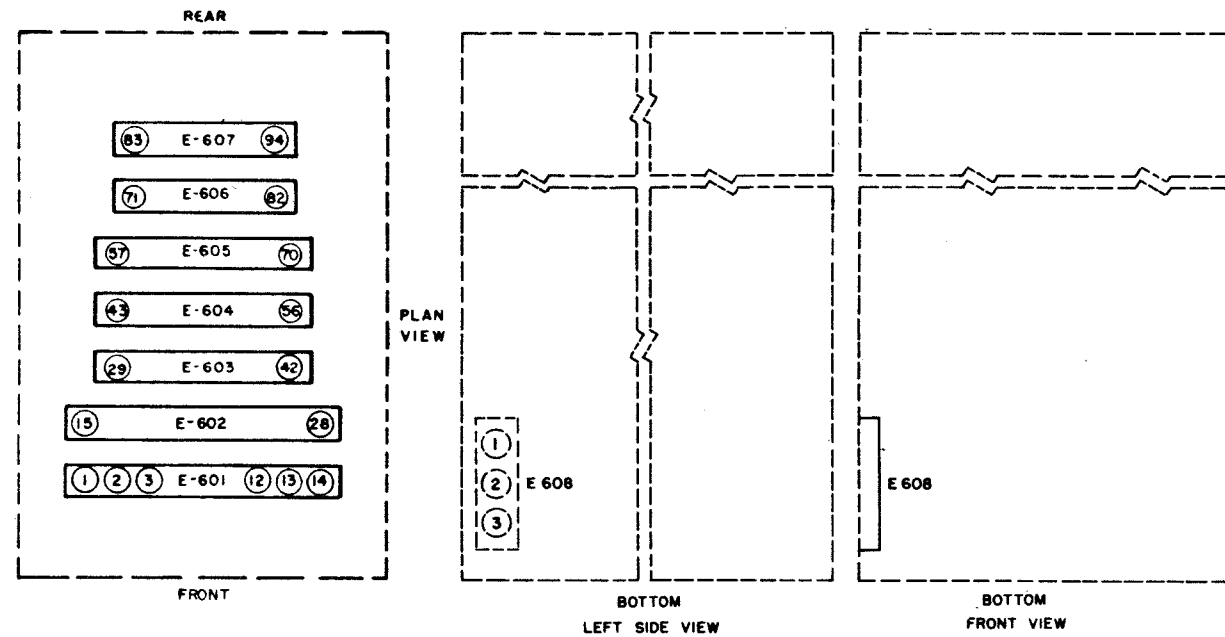
- ALLOW 1/2" CLEARANCE ON ALL SIDES AND TOP FOR EXCURSION OF UNIT ON SHOCK MOUNTS.
- TOP COVER MUST BE REMOVED TEMPORARILY TO ATTACH INSTALLATION EYEBOLTS (ITEM NO.12).
- ALL REMOVABLE PANELS ARE ATTACHED WITH NO. 8-32 x 3/8 LG. ROUND HD. MACH. SCREWS & LOCKWASHER
- ITEM NOS. 1, 2, & 3 ARE SHIPPED WITH BASE BOARDS TO PREVENT DAMAGE TO ALIGNING TABS ON SIDE PANELS. CAUTION: AVOID DAMAGE TO TABS DURING INSTALLATION.
- EQUIPMENT DRAWERS WEIGH FROM 90 TO 140 LBS. EACH. IN ADDITION TO 36" REQUIRED FOR DRAWER TO CLEAR FRONT OF TRANSMITTER, ADEQUATE STANDING ROOM FOR TWO MEN REMOVING DRAWER MUST BE AVAILABLE. CLEARANCES SPECIFIED BELOW ARE MINIMUM REQUIREMENTS, INCREASE WHEREVER POSSIBLE. SELECT EITHER (a) OR (b).
(a) 36" MIN. FRONT CLEARANCE, 16" MIN. CLEARANCE ON EACH SIDE OF ANY OPEN DRAWER.
(b) 54" MIN. FRONT CLEARANCE, 4" MIN. CLEARANCE ON ONE SIDE OF ANY OPEN DRAWER, 20" ON THE OTHER.
THE ABOVE CLEARANCES APPLY WHEN REMOVING THE RADIO FREQUENCY OSCILLATOR (O-275/SRT) DRAWER ONLY IF CONTROL-INDICATOR (C-1352/SRT) HAS BEEN REMOVED FROM RFO FRONT PANEL PRIOR TO DRAWER REMOVAL.
- DRAIN TUBE FROM DRIP PAN ON EACH TRANSMITTER.
- EACH TOP COVER IS PROVIDED WITH ONE VENT ALLOW AT LEAST 1 IN. CLEARANCE FOR VENTILATION ABOVE COVER.
- 3/8" CAP SCREWS SUPPLIED BY NAVY.
- FOR DETAILS ON CABLE ENTRANCE AND TERMINAL BOARD LOCATIONS SEE TERMINAL BOARD AND CABLE ENTRANCE DATA DRAWING FIGURE 3-26
- EQUIPMENT CABINETS ARE CRATED WITH EQUIPMENT DRAWERS MOUNTED IN THEM. EQUIPMENT DRAWERS SHOULD BE REMOVED WHILE EQUIPMENT CABINETS ARE BEING INSTALLED FOR EASE OF HANDLING.
- 500 W. STACK MOUNTS ON HIGH LEVEL RADIO MODULATOR CABINET (ITEM 2b) AND IS THE LEFT HAND STACK FROM THE FRONT IN THE STANDARD ARRANGEMENT.

| | WEIGHT UNCRATED | WEIGHT CRATED | DIMENSIONS CRATED | VOLUME CRATED |
|------------------|-----------------|---------------|-------------------------|---------------|
| ITEM NO. 1. | * 765 LBS. | * 1086 LBS. | * 34" h x 29" w x 67" d | * 38.2 CU.FT. |
| ITEM NO. 2 | 350 LBS. | 407 LBS. | 26" h x 24" w x 34" d | 12.3 CU.FT. |
| ITEM NO. 3 (EA.) | 100 LBS. | 137 LBS. | 17" h x 21" w x 29" d | 5.9 CU.FT. |

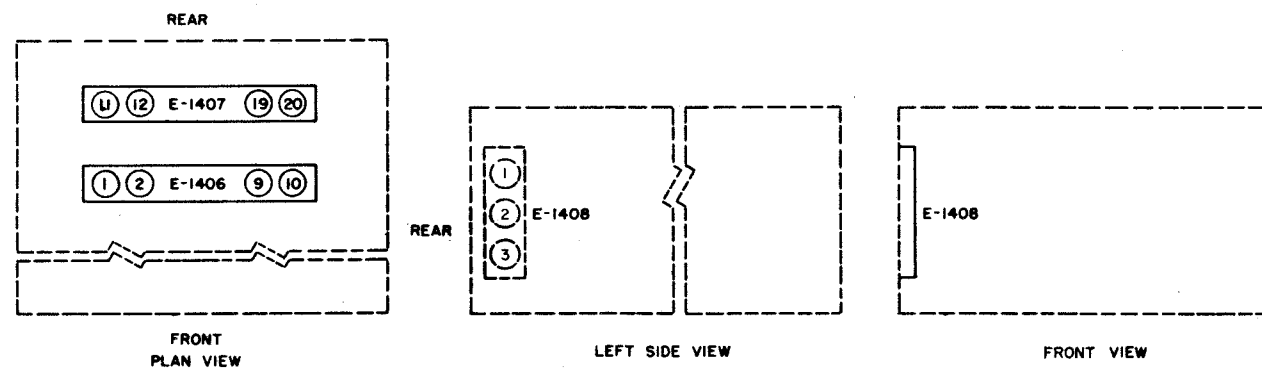
* CONTROL-INDICATOR (C-1352/SRT) AND ELECTRON TUBE TYPE 4-400A (V-1304) ARE PACKAGED WITH TRANSMITTER-COUPLER (CU-402/SRT) SEE TRANSMITTER-COUPLER OUTLINE DRAWING FOR COMBINED WEIGHTS AND DIMENSIONS.

HEAT DISSIPATION 4900 WATTS MAXIMUM
DESIGNED FOR AMBIENT TEMPERATURE
RANGE -20°C TO +50°C.

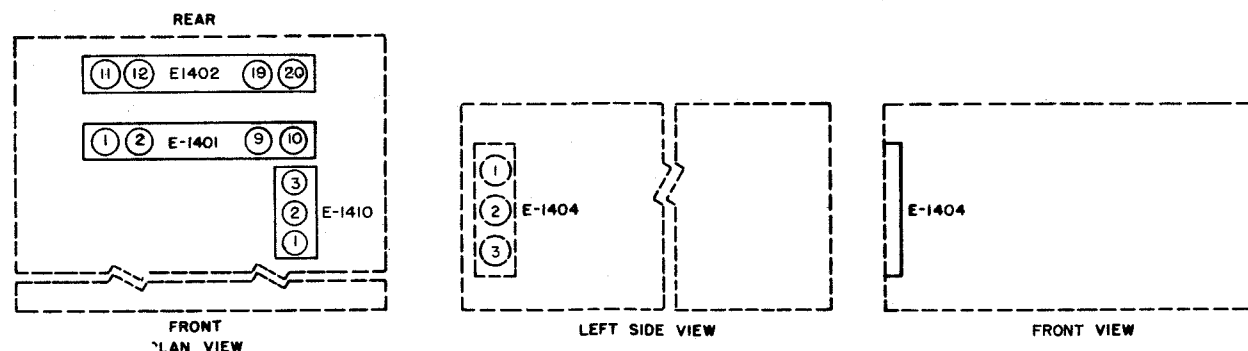
Figure 3-25. Outline Drawing, Transmitter Bay, AN/SRT-16



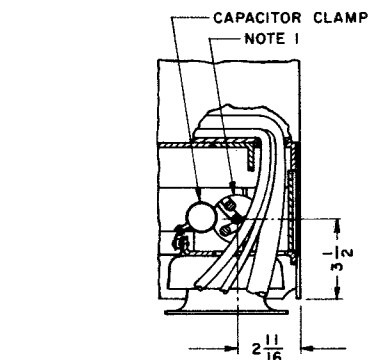
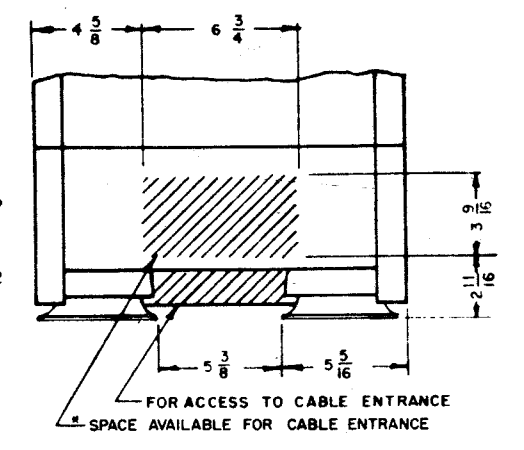
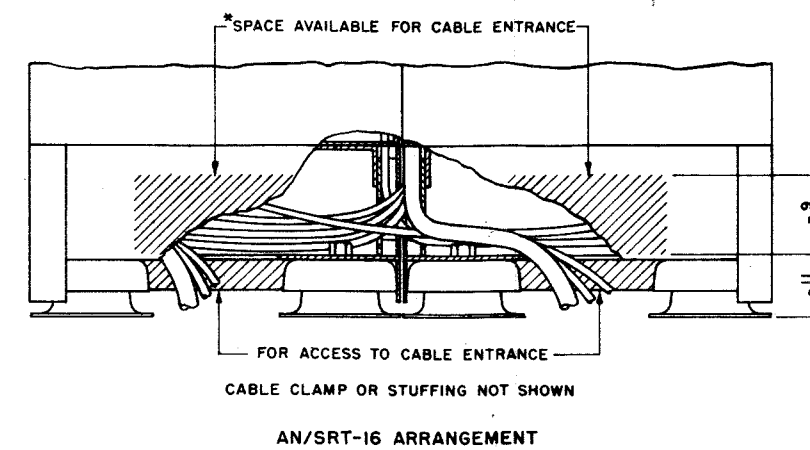
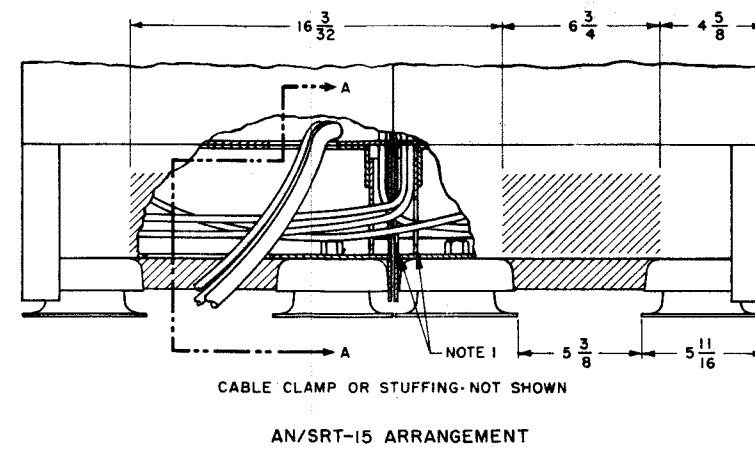
DET. A
CABINET (CY-1571/SRT)
TRANSMITTER GROUP



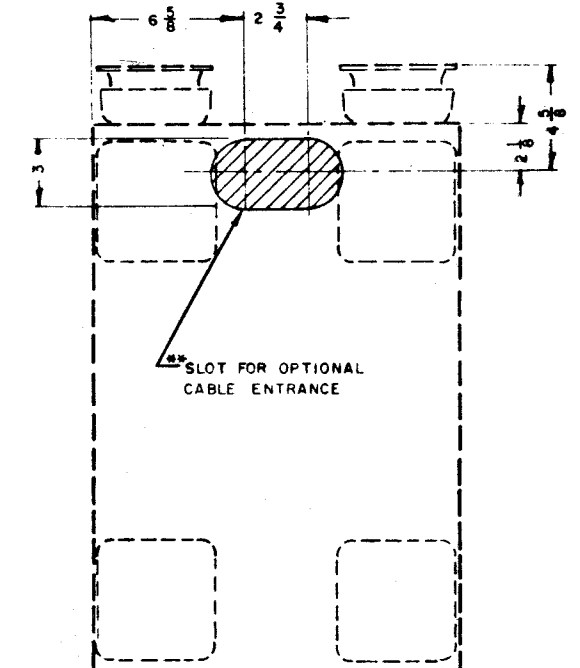
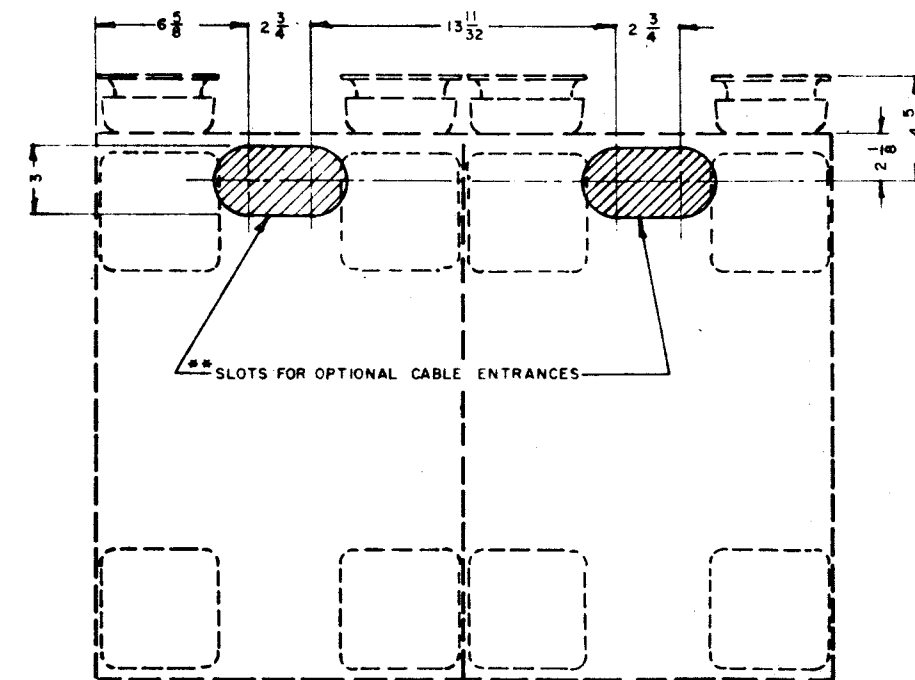
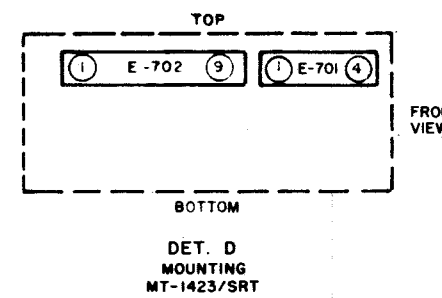
DET. B
CABINET (CY-1572/SRT)
HIGH LEVEL RADIO MODULATOR



DET. C
CABINET (CY-1573/SRT)
HIGH VOLTAGE POWER SUPPLY



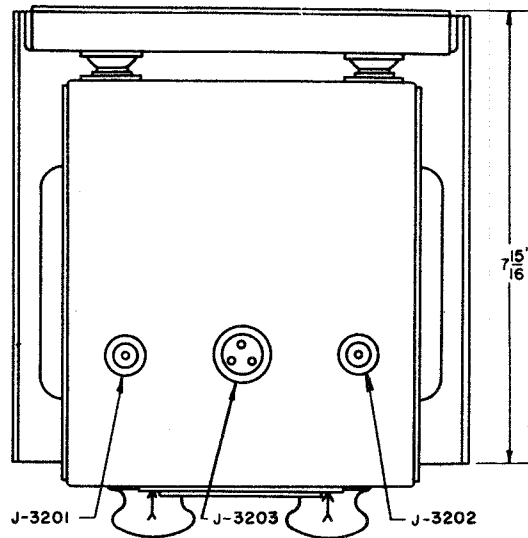
SECTION A-A
TYPICAL FOR ALL TRANSMITTER
BAYS WITH ADJOINING STACKS.



NOTES:
1. TWO-INCH DIAMETER CUTOUT MADE IN SIDE PANEL-AT
INSTALLATION. REMOVE BURRS. GUSSET HOLE PRO-
VIDED IN EQUIPMENT.

* MOUNTING REAR PANEL MAY BE REMOVED AND SUITABLE
CUT-OUTS MADE FOR CABLE ENTRANCE
** 1/32 PLATE COVERING SLOT IN BOTTOM MAY BE REMOVED
AND SUITABLE CUT-OUTS MADE FOR CABLE ENTRANCE

Figure 3-26. Terminal Board and Cable Entrance Data, AN/SRT-14, 15 and 16



NOTES:

1. CABLE ASSEMBLY W-3301, CONSISTING OF CONNECTOR P-3315, CABLE CLAMP (AN-3057-6) AND 14 FOOT LENGTH OF CABLE (CO-02LGF(2/18)SJO350), IS SUPPLIED WITH THE INSTALLATION MATERIAL.
2. 1/4 DIA. BOLTS FURNISHED BY NAVY.

CONNECTOR INFORMATION

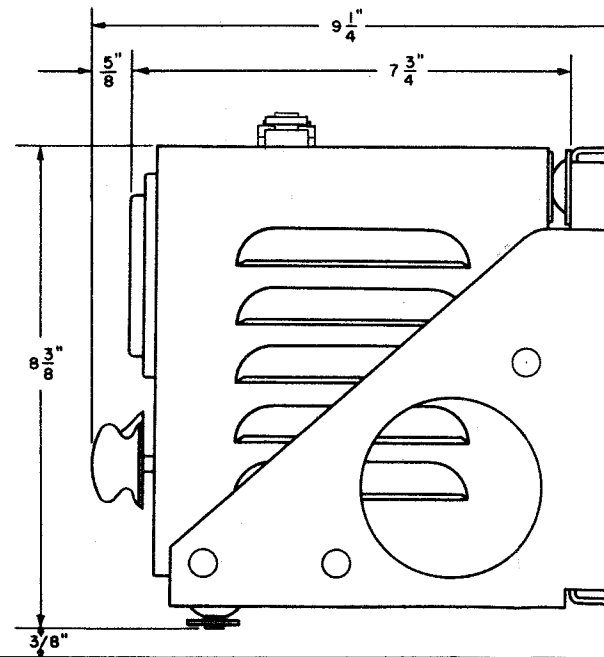
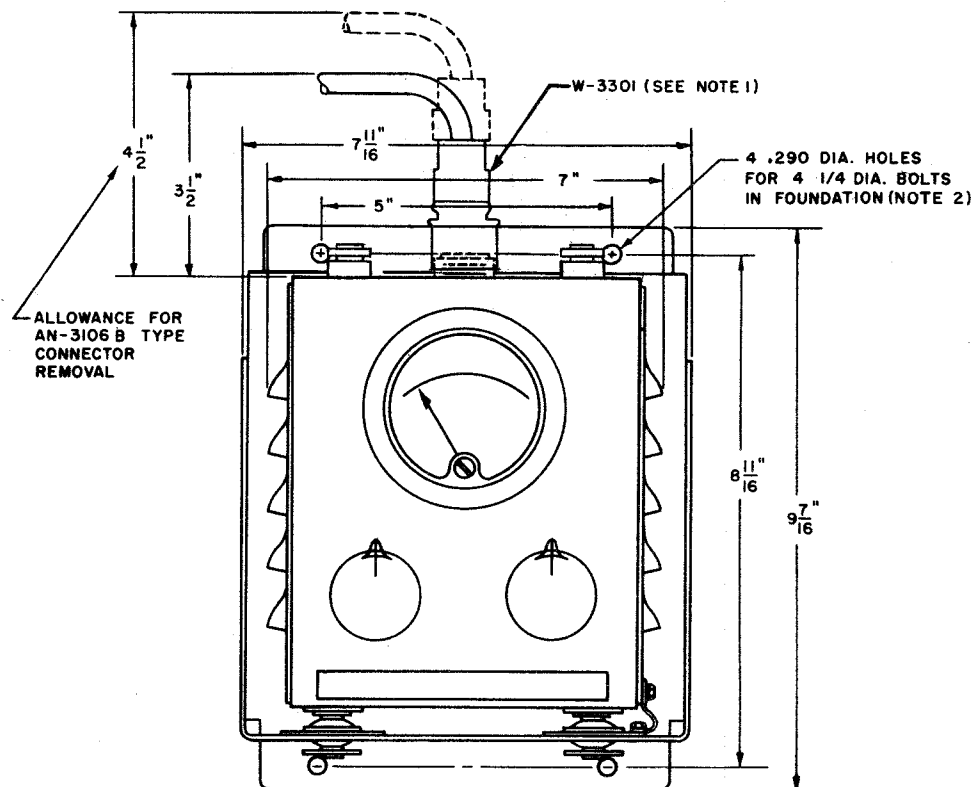
| RECEPTACLE | | MATING PLUG | |
|------------|-----------------|-------------|-----------------|
| J-3201 | UG-58A/U | P-3314 | UG-21B/U |
| J-3202 | UG-58A/U | P-3308 | UG-167A/U |
| J-3203 | AN-3102A-14S-7S | P-3315 | AN-3106B-14S-7P |

WEIGHT, lbs.*20 CRATED 11 UNCRATED

DIMENSIONS, CRATED*13" h X 17" w X 20"

VOLUME, CRATED*2.5 CU. FT.

* TRANSMITTER COUPLER, CU-402/SRT IS PACKAGED WITH CONTROL INDICATOR, C-1352/SRT AND ELECTRON TUBE, TYPE 4-400A(V-1304). CRATED DATA INCLUDES ALL THREE ITEMS.



HEAT DISSIPATION 100 WATTS
MAXIMUM DESIGNED FOR AMBIENT
TEMPERATURE RANGE -20°C TO
+50°C.

Figure 3-27. Outline Drawing, Transmitter Coupler CU-402/SRT

CONNECTOR INFORMATION

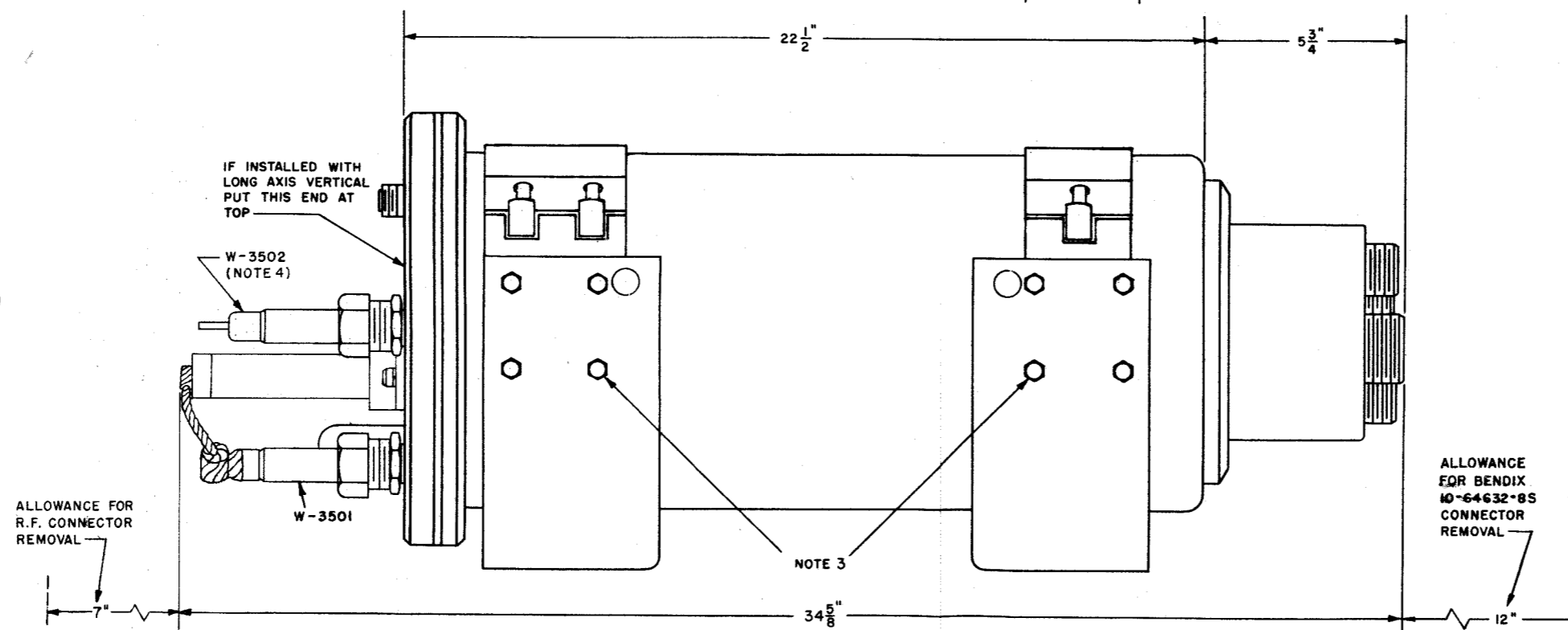
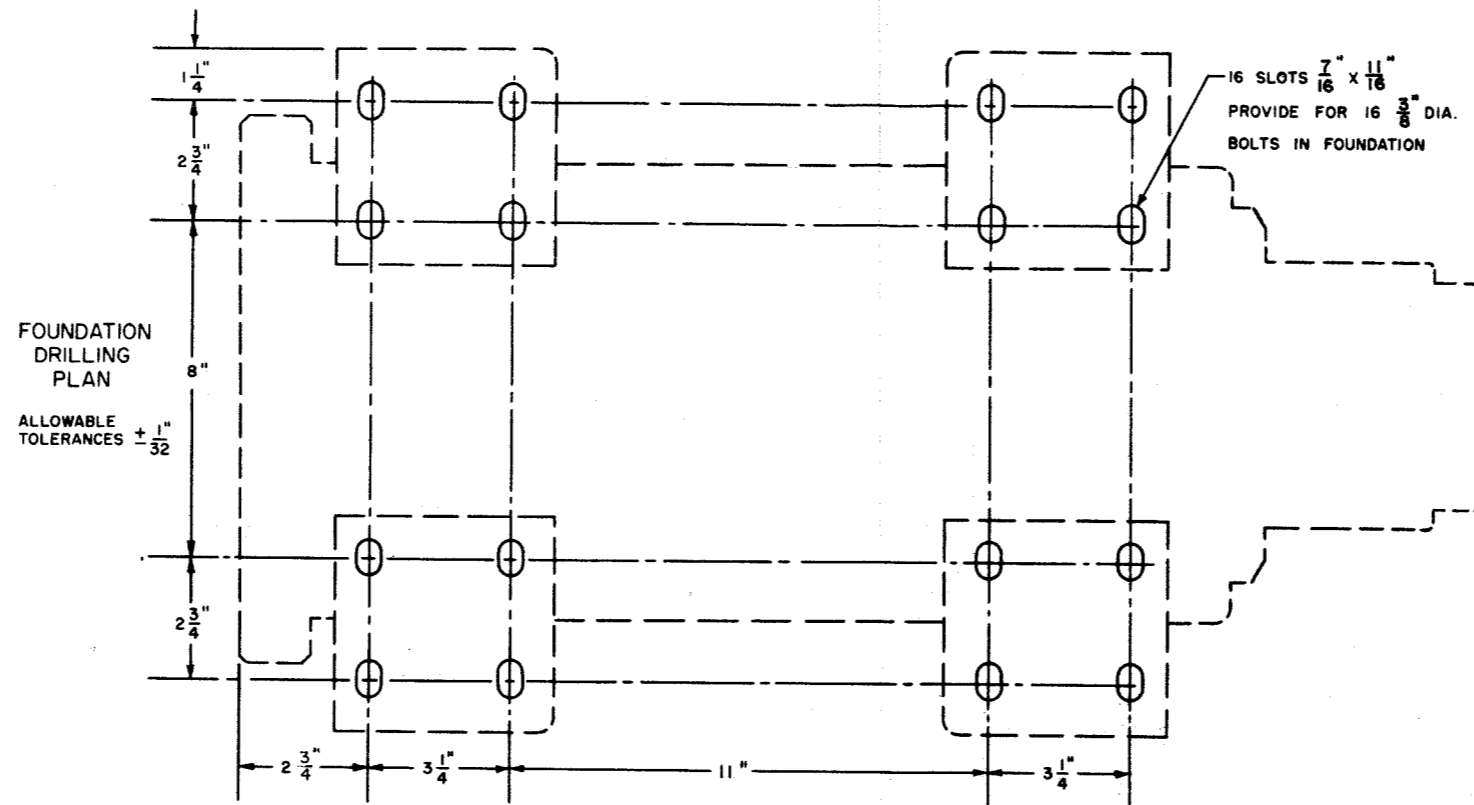
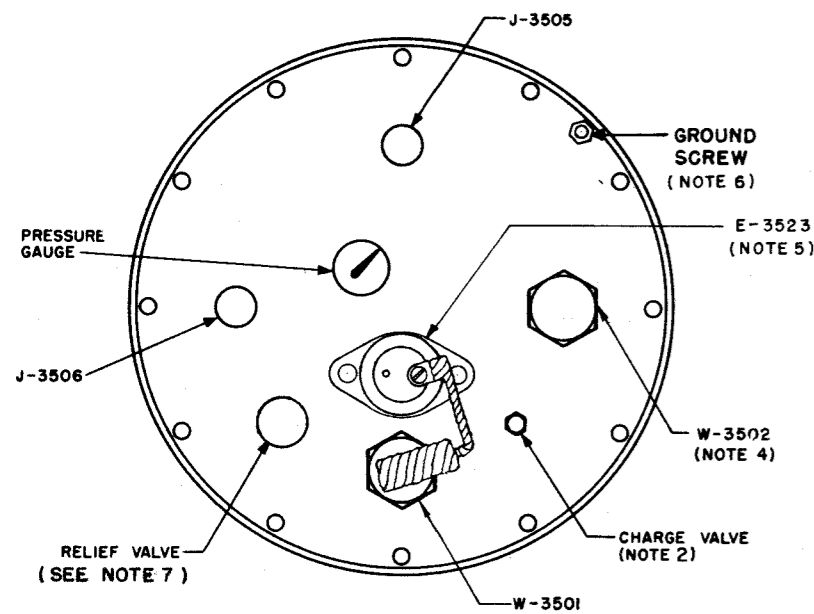
| RECEPTACLE | MATING PLUG |
|--------------------------------|-------------------------------|
| J-3501 AN-3102E-32-8S | P-3304 BENDIX 10-64632-8P |
| J-3502 CANNON GS02-32-8P001 | P-3301 BENDIX 10-64632-8S |
| J-3503 AN-3102E-24-28S | P-3303 BENDIX 10-64624-28P |
| J-3504 CANNON GS02-24-28P001 | P-3302 BENDIX 10-64624-28S |
| J-3505 UG-287/U (MODIFIED) | P-3309 UG-154/U |
| J-3506 UG-287/U (MODIFIED) | P-3307 UG-154/U |
| W-3502 RG-19/U FIRST EXTRUSION | P-3311 CBTL A2011254 (NOTE 4) |
| E-3523 STANDOFF INSULATOR | (NOTE 5) |

WEIGHT, LBS. 160 CRATED, 100 UNCRATED

DIMENSION, CRATED 16" h x 20" w x 36" d

VOLUME, CRATED 6.7 CU. FT.

DESIGNED FOR AMBIENT TEMPERATURE RANGE -25°C TO +65°C.



NOTES:

1. THIS UNIT MAY BE MOUNTED IN EITHER VERTICAL OR HORIZONTAL POSITION.
2. THIS UNIT IS PRESSURIZED WITH DRY NITROGEN GAS AT A PRESSURE OF 20 LBS/SQ. IN.
3. SHOCK MOUNTS ARE ATTACHED TO MOUNTING BRACKET BY SIXTEEN 1/4-20 X 3/4 LG. HEX HD. STEEL, CAD. PLATE CAP SCREWS, THIRTY-TWO 1/4 SPLIT, STAINLESS STEEL LOCKWASHERS AND SIXTEEN 1/4-20 STEEL, CAD. PLATE HEX NUTS. TO REMOVE UNIT FOR MAINTENANCE PURPOSES THESE SCREWS, WASHERS AND NUTS ARE REMOVED.
4. R.F. INTERCONNECTION TO RADIO FREQUENCY TUNER, TN-229/SRT IS MADE TO W-3502 BY MEANS OF LENGTH OF RG-17/U FIRST EXTRUSION CABLE AND CONNECTOR P-3311. LOCATE THE ANTENNA-COUPLER TO KEEP LENGTH OF RG-17/U FIRST EXTRUSION CABLE AND ANTENNA LEAD-IN WITHIN A MAXIMUM LENGTH OF FIVE FEET.
5. 1/4-20 NC-2 THREAD 1/2 INCH DEEP HOLE PROVIDED IN STANDOFF INSULATOR E-3523 FOR CLAMPING DEVICE TO ANTENNA LEAD-IN. CLAMPING DEVICE AND ANTENNA LEAD-IN PROVIDED BY NAVY.
6. GROUNDING STRAP SUPPLIED WITH INSTALLATION MATERIAL.
7. RELIEF VALVE LOCATED UNDER FINGER COT.

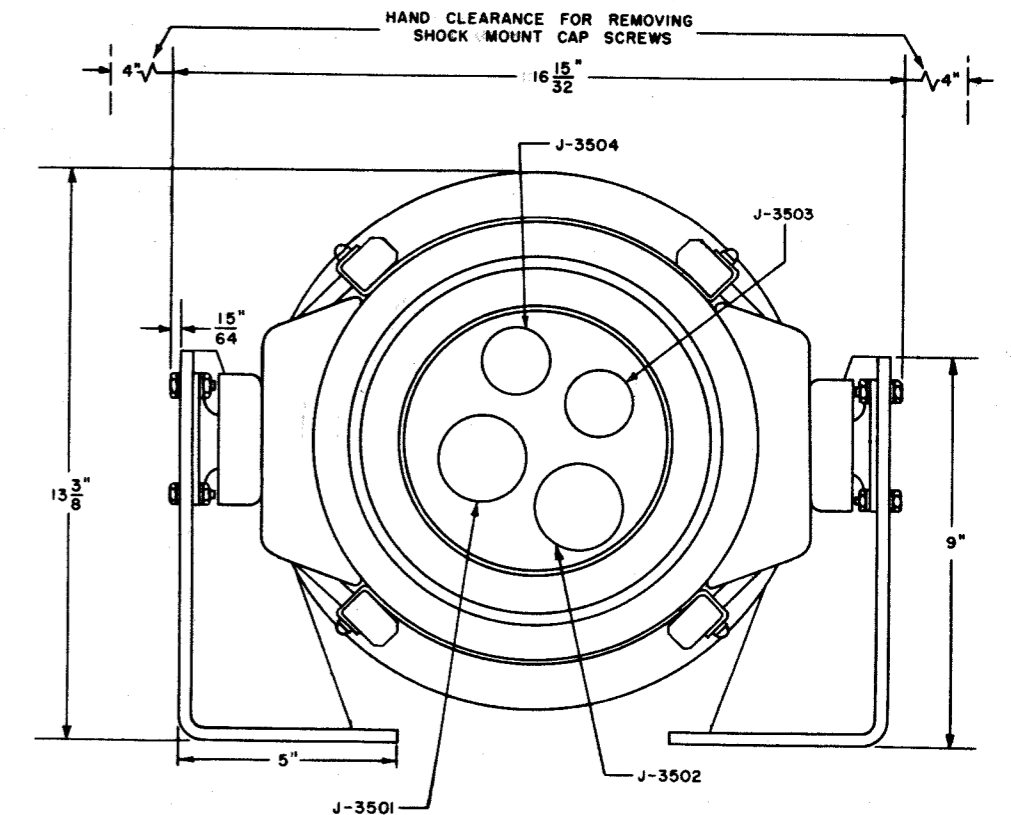
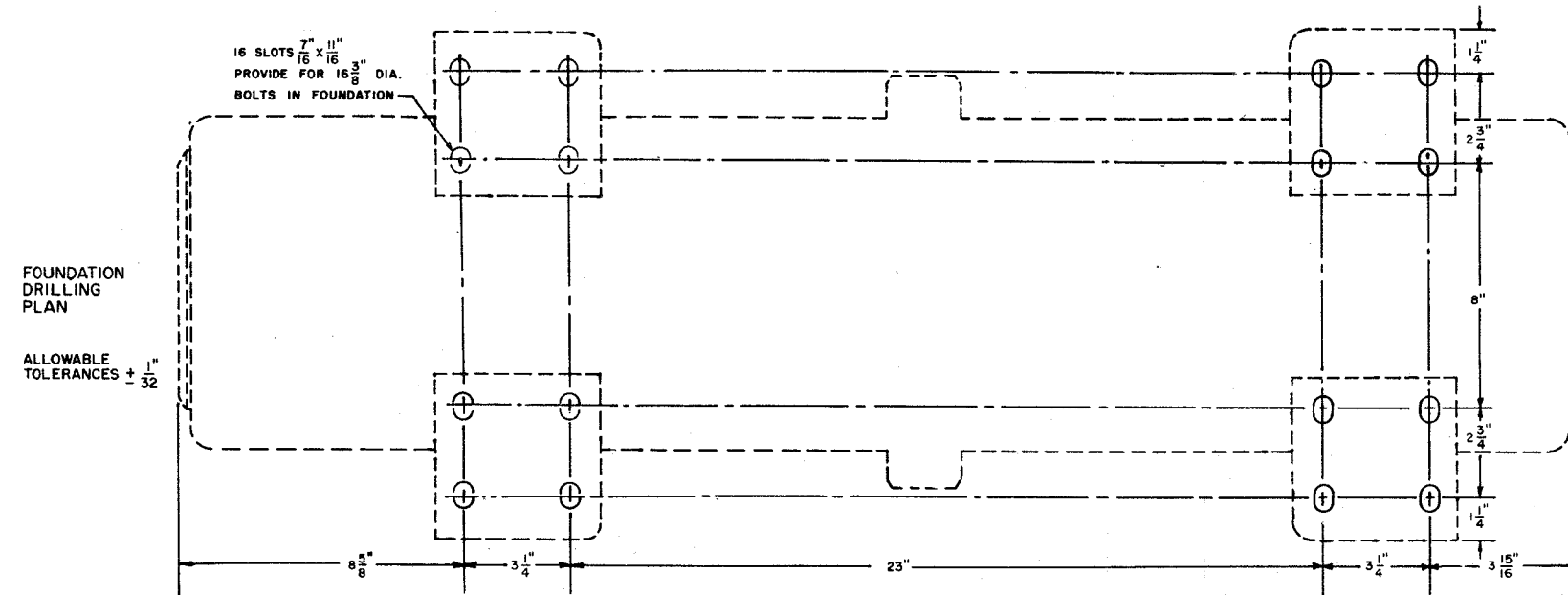


Figure 3-28. Outline Drawing, Antenna Coupler CU-372/SRT



NOTES:

1. THIS UNIT MAY BE MOUNTED IN EITHER VERTICAL OR HORIZONTAL POSITION.
2. THIS UNIT IS PRESSURIZED WITH DRY NITROGEN GAS AT A PRESSURE OF 20 LBS/SQ. IN.
3. SHOCK MOUNTS ARE ATTACHED TO MOUNTING BRACKET BY SIXTEEN 1/4-20 X 3/4 LG. HEX. HD. STEEL, CAD. PLATE CAP SCREWS, THIRTY-TWO 1/4 SPLIT, STAINLESS STEEL LOCKWASHERS AND SIXTEEN 1/4-20 STEEL, CAD. PLATE HEX NUTS. TO REMOVE UNIT FOR MAINTENANCE PURPOSES THESE SCREWS, WASHERS AND NUTS ARE REMOVED.
4. R.F. INTERCONNECTION TO ANTENNA COUPLER IS MADE TO W-301 BY MEANS OF A LENGTH OF RG-17/U FIRST EXTRUSION CABLE AND CONNECTOR P-3312. LOCATE THE R.F. TUNER TO KEEP LENGTH OF RG-17/U FIRST EXTRUSION TO A MINIMUM.
5. RELIEF VALVE LOCATED UNDER FINGER COT.
6. GROUNDING STRAP SUPPLIED WITH INSTALLATION MATERIAL.

CONNECTOR INFORMATION

| RECEPTACLE | MATING PLUG |
|------------------------------------|-------------------------------|
| J-301 CANNON GSO2-32-8P001 (MOD.) | P-3306 BENDIX 10-64632-8S |
| J-302 CANNON GSO2-24-28P001 (MOD.) | P-3305 BENDIX 10-64624-28S |
| J-303 UG-287/U (MOD.) | P-3310 UG-154/U |
| W-301 RG-19/U FIRST EXTRUSION | P-3312 CBTL A2011254 (NOTE 4) |

WEIGHT, lbs. 201 CRATED 135 UNCRATED
DIMENSIONS, CRATED 16" h x 20" w x 55" d
VOLUME, CRATED 10.1 CU. FT.
DESIGNED FOR AMBIENT TEMPERATURE RANGE -25° C TO +65° C

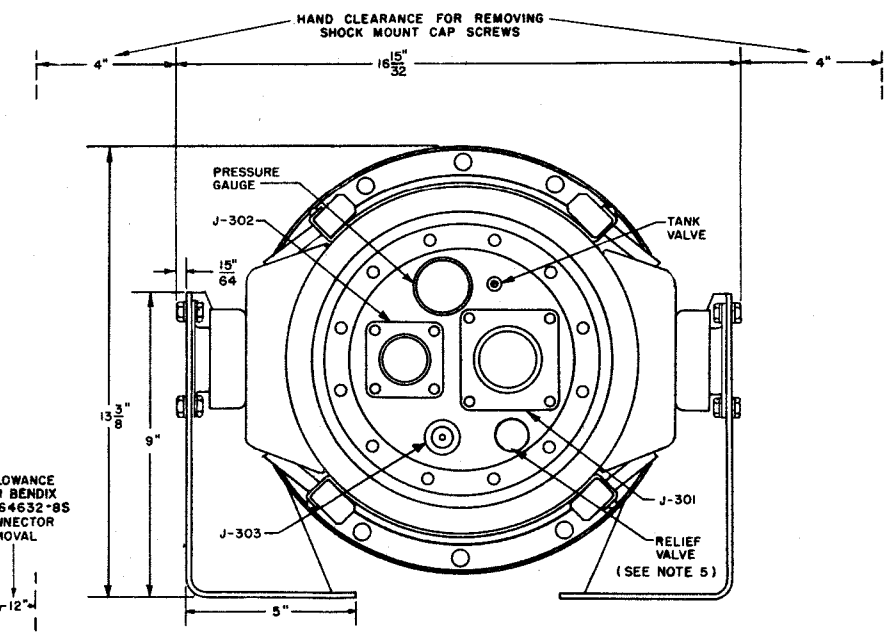
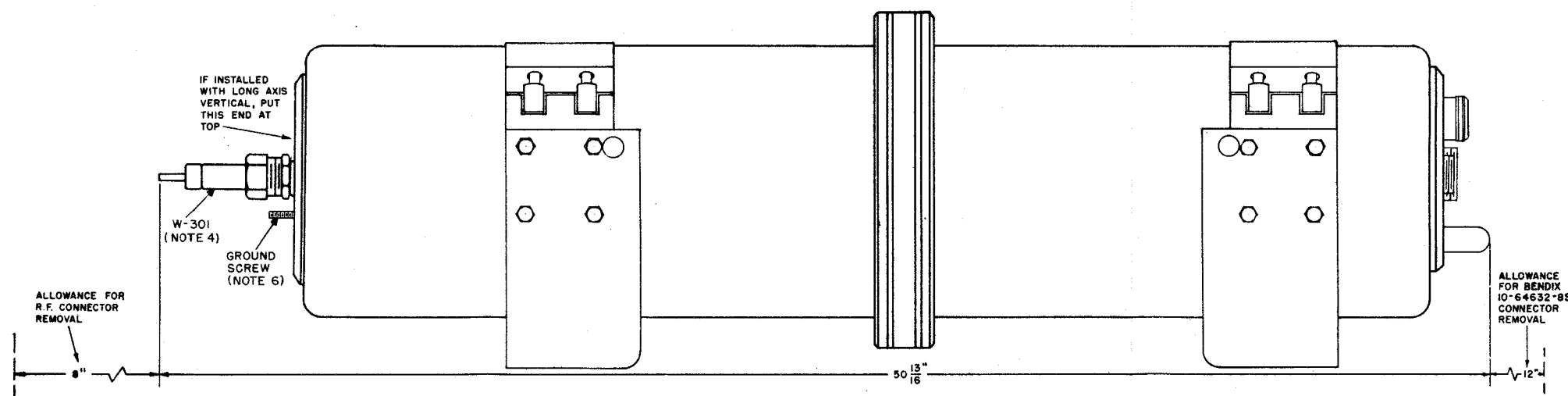
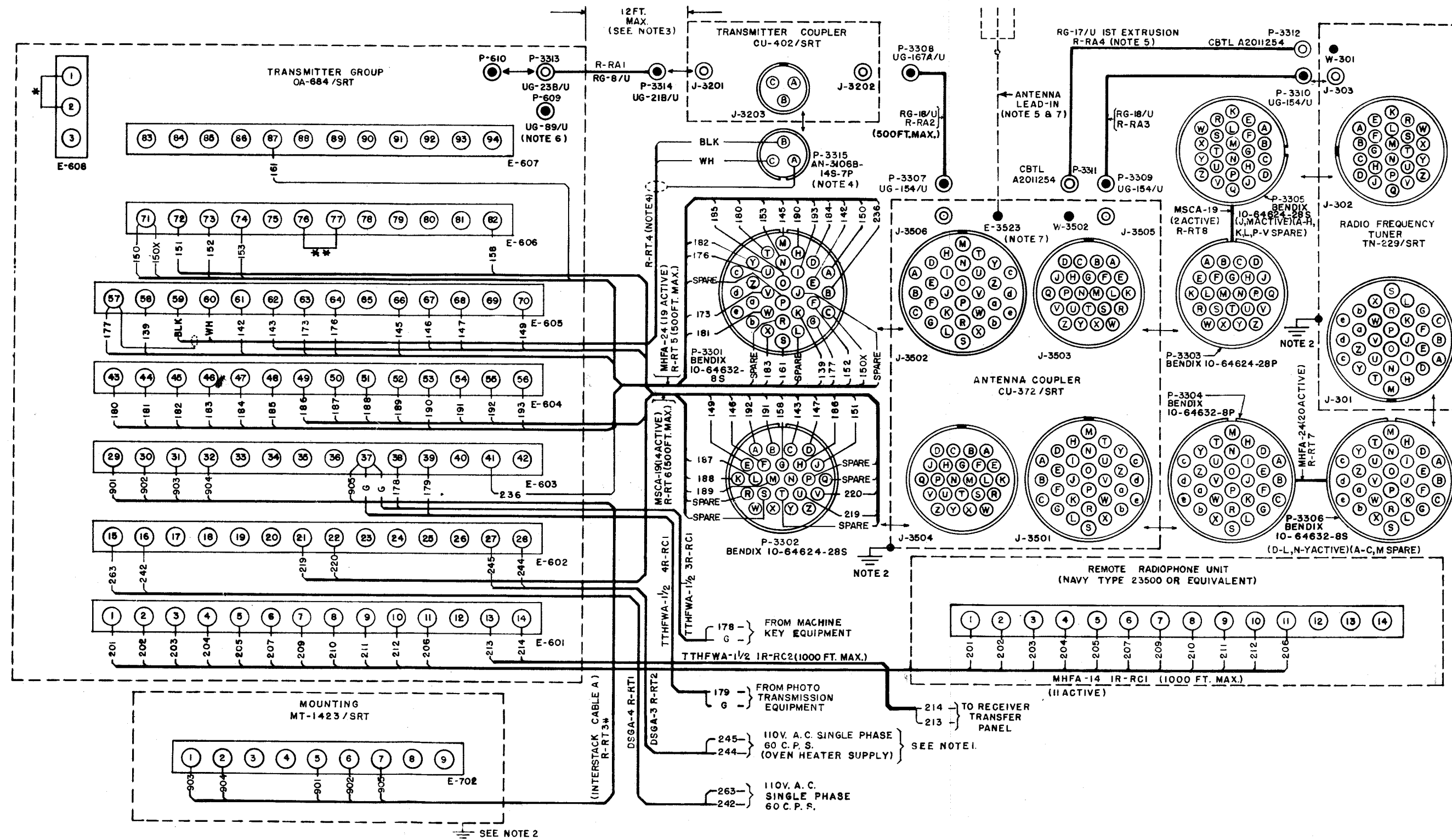


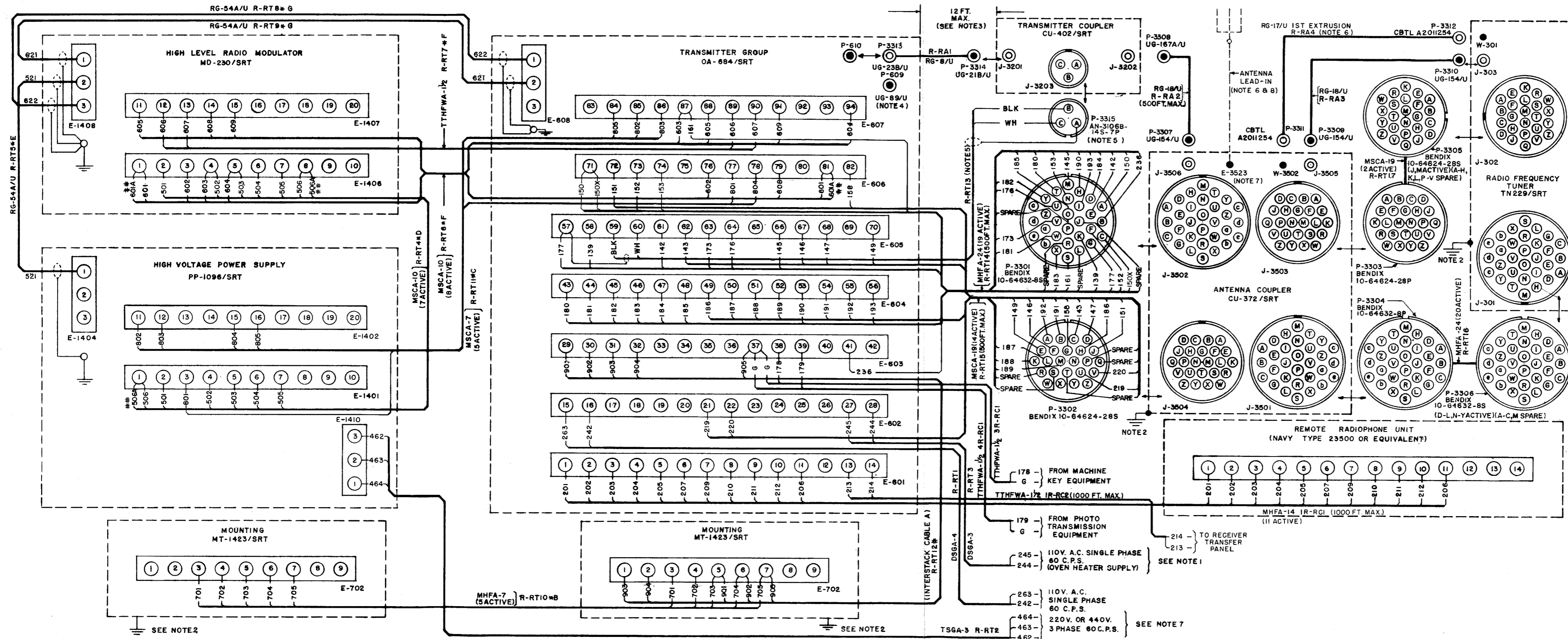
Figure 3-29. Outline Drawing, Radio Frequency Tuner TN-229/SRT



NOTES:

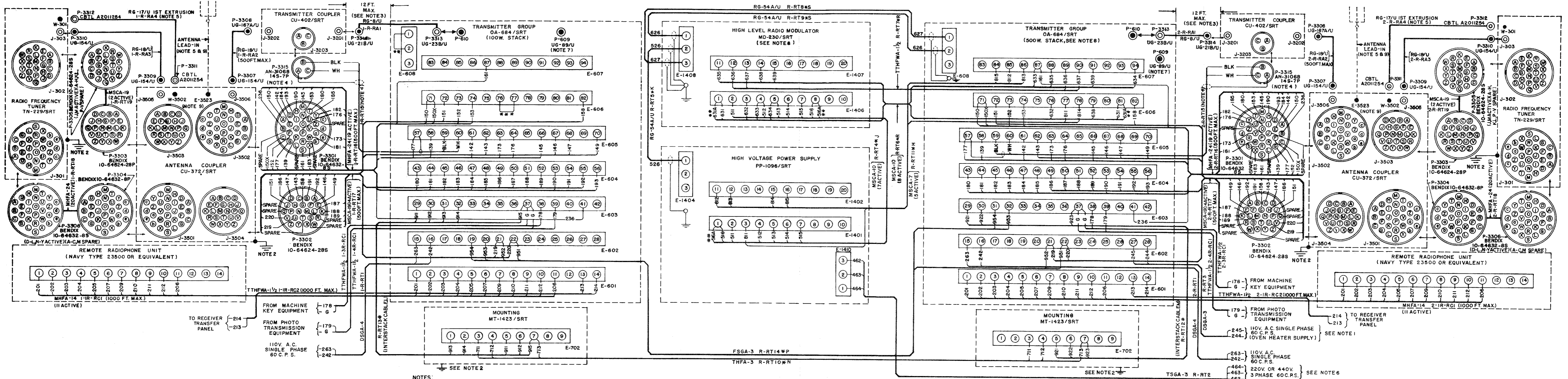
1. AN UNINTERRUPTED SOURCE OF 110 V., 60 C.P.S., A.C. POWER IS CONNECTED TO E-602 TERMINALS 27 AND 28 TO FEED OVEN HEATERS IN THE RF OSCILLATOR AND BY-PASS SWITCH ACTUATOR IN THE ANTENNA COUPLER.
 2. ALL GROUNDING STRAPS SUPPLIED WITH EQUIPMENT.
 3. LOCATION OF TRANSMITTER COUPLER, CU-402/SRT, IS LIMITED BY LENGTH OF CABLE R-RT4 WHICH EXTENDS 12 FEET FROM CABLE ENTRANCE IN MOUNTING.
 4. CONNECTOR P-3315 AND CABLE R-RT4 ARE SUPPLIED AS AN ASSEMBLY WITH THE INSTALLATION MATERIAL.
 5. LOCATE ANTENNA COUPLER AND R.F. TUNER SO THAT COMBINED LENGTH OF R-RA4 AND THE ANTENNA LEAD-IN IS LESS THAN 5 FEET.
 6. CONNECTOR P-609, SUPPLIED WITH THE EQUIPMENT, IS A R.F. OUTPUT TO A RECEIVER.
 7. 1/4-20 NC-2 THREAD, 1/2 IN. DEEP HOLE PROVIDED IN STANDOFF INSULATOR, E-3523, FOR FASTENING A CLAMPING DEVICE TO ANTENNA LEAD-IN. CLAMPING DEVICE AND ANTENNA LEAD-IN PROVIDED BY NAVY.
- * SRHV - 2 1/2 (19) - 16.
** SRIR - 1 1/2 (7) - 18.
CABLE R-RT3 IS SUPPLIED WITH THE EQUIPMENT.

Figure 3-30. Interconnecting Cabling Diagram AN/SRT-14



- NOTES:
- AN UNINTERRUPTED SOURCE OF 110V, 60 C.P.S., A.C. POWER IS CONNECTED TO E-602 TERMINALS 27 AND 28 TO FEED OVEN HEATERS IN THE RF OSCILLATOR AND BY-PASS SWITCH ACTUATOR IN THE ANTENNA COUPLER.
 - ALL GROUNDING STRAPS SUPPLIED WITH EQUIPMENT.
 - LOCATION OF TRANSMITTER COUPLER, CU-402/SRT, IS LIMITED BY LENGTH OF CABLE R-RT13 WHICH EXTENDS 12 FEET FROM CABLE ENTRANCE IN MOUNTING.
 - CONNECTOR P-609, SUPPLIED WITH THE EQUIPMENT, IS A R.F. OUTPUT TO A RECEIVER.
 - CONNECTOR P-3315 AND CABLE R-RT13 ARE SUPPLIED AS AN ASSEMBLY WITH THE INSTALLATION MATERIAL.
 - LOCATE ANTENNA COUPLER AND R.F. TUNER SO THAT COMBINED LENGTH OF R-RA4 AND THE ANTENNA LEAD-IN IS LESS THAN 5 FEET.
 - IN SELECTING 220 OR 440 VOLT A.C. OPERATION ADJUST LINKS ON THE FOLLOWING UNITS: HIGH VOLTAGE POWER SUPPLY, E-1504; HIGH LEVEL RADIO MODULATOR, E-1603.
- * WHEN THE STANDARD ARRANGEMENT WITH ADJOINING STACKS IS USED, PREFABRICATED CABLES SUPPLIED WITH THE EQUIPMENT ARE USED FOR ALL CABLES MARKED WITH AN ASTERISK. IN NON-STANDARD ARRANGEMENTS SEVERAL NAVY-TYPE CABLES MAY BE REQUIRED TO CARRY THE CIRCUITS OF A SINGLE PREFABRICATED CABLE, e.g. CABLE F: R-RT6 & R-RT7, CABLE G: R-RT8 & R-RT9. FOR ALL ALTERNATE OR SEPARATED FLOORPLAN ARRANGEMENTS, FABRICATE CABLES LOCALLY FROM INDICATED NAVY-TYPE OR EQUIVALENT EACH HAVING MAXIMUM LENGTH OF 10 FEET.
- # CABLE R-RT12 IS SUPPLIED WITH THE EQUIPMENT.
- ## CABLE WIRES NUMBERED WITH "A" SUFFIXES ARE NOT REQUIRED WHEN THE PREFABRICATED CABLES SUPPLIED WITH THE EQUIPMENT ARE USED.
8. 1/4-20 NC-2 THREAD, 1/2 IN. DEEP HOLE PROVIDED IN STANDOFF INSULATOR, E-3523, FOR FASTENING A CLAMPING DEVICE TO ANTENNA LEAD-IN. CLAMPING DEVICE AND ANTENNA LEAD-IN PROVIDED BY NAVY.

Figure 3-31. Interconnecting Cabling Diagram, AN/SRT-15



NOTES:

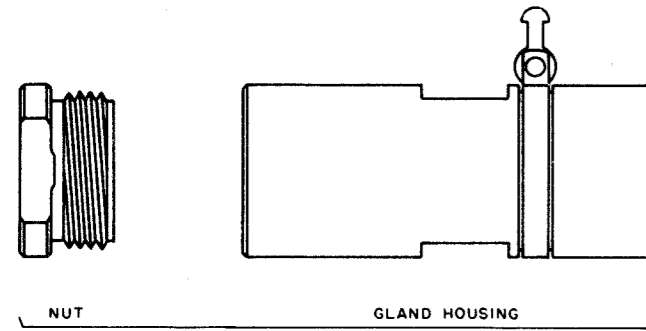
- AN UNINTERRUPTED SOURCE OF 110V., 60 C.P.S., A.C. POWER IS CONNECTED TO E-602 TERMINALS 27 AND 28 TO FEED OVEN HEATERS IN THE RF OSCILLATOR AND BY-PASS SWITCH ACTUATOR IN THE ANTENNA COUPLER.
- ALL GROUNDING STRAPS SUPPLIED WITH EQUIPMENT.
- LOCATION OF TRANSMITTER COUPLER, CU-402/SRT, IS LIMITED BY LENGTH OF CABLE R-RT16 WHICH EXTENDS 12 FEET FROM CABLE ENTRANCE IN MOUNTING.
- CONNECTOR P-3315 AND CABLE R-RT15 ARE SUPPLIED AS AN ASSEMBLY WITH THE INSTALLATION MATERIAL.
- LOCATE ANTENNA COUPLER AND R.F. TUNER SO THAT COMBINED LENGTH OF R-RA4 AND THE ANTENNA LEAD-IN IS LESS THAN 5 FEET.
- IN SELECTING 220 OR 440 VOLT A.C. OPERATION ADJUST LINKS ON THE FOLLOWING UNITS: HIGH VOLTAGE POWER SUPPLY, T-1502, E-1503 AND E-1504; HIGH LEVEL RADIO MODULATOR, E-1603.
- CONNECTOR P-609, SUPPLIED WITH THE EQUIPMENT, IS A R.F. OUTPUT TO A RECEIVER.

- 500 W. STACK MOUNTS ON HIGH LEVEL RADIO MODULATOR CABINET AND IS THE LEFT HAND STACK FROM THE FRONT IN THE STANDARD ARRANGEMENT.
- 1/4-20 NC-2 THREAD, 1/8 IN. DEEP HOLE PROVIDED IN STANDOFF INSULATOR, E-3523, FOR FASTENING A CLAMPING DEVICE TO ANTENNA LEAD-IN. CLAMPING DEVICE AND ANTENNA LEAD-IN PROVIDED BY NAVY.
- CABLES R-RT12, R-RT13 ARE SUPPLIED WITH THE EQUIPMENT.
- CABLE WIRES NUMBERED WITH "A" SUFFIXES ARE NOT REQUIRED WHEN THE PREFABRICATED CABLES SUPPLIED WITH THE EQUIPMENT ARE USED.

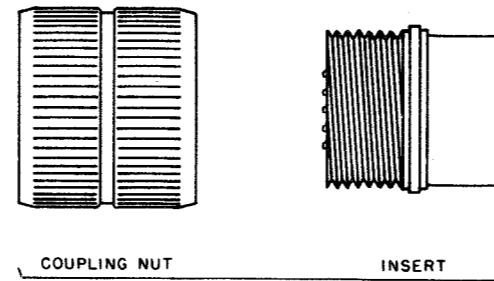
- WHEN THE STANDARD ARRANGEMENT WITH ADJOINING STACKS IS USED, PREFABRICATED CABLES SUPPLIED WITH THE EQUIPMENT ARE USED FOR ALL CABLES MARKED WITH AN ASTERISK. IN NON-STANDARD ARRANGEMENTS SEVERAL NAVY-TYPE CABLES MAY BE REQUIRED TO CARRY THE CIRCUITS OF A SINGLE PREFABRICATED CABLE, e.g. CABLE F: R-RT6, R-RT7. FOR ALL ALTERNATE OR SEPARATED FLOORPLAN ARRANGEMENTS, FABRICATE CABLES LOCALLY FROM INDICATED NAVY-TYPE OR EQUIVALENT, EACH HAVING MAXIMUM LENGTH OF 10 FEET.

- SRHV-2 1/2 (19)-16.
- SRIR-1 1/2 (7)-18.

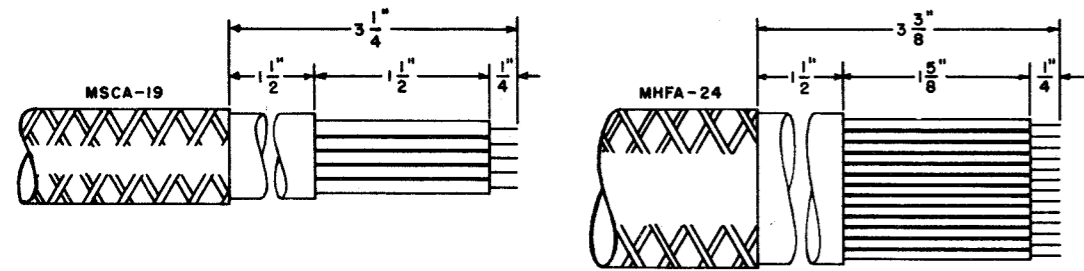
Figure 3-32. Interconnecting Cabling Diagram, AN/SRT-14



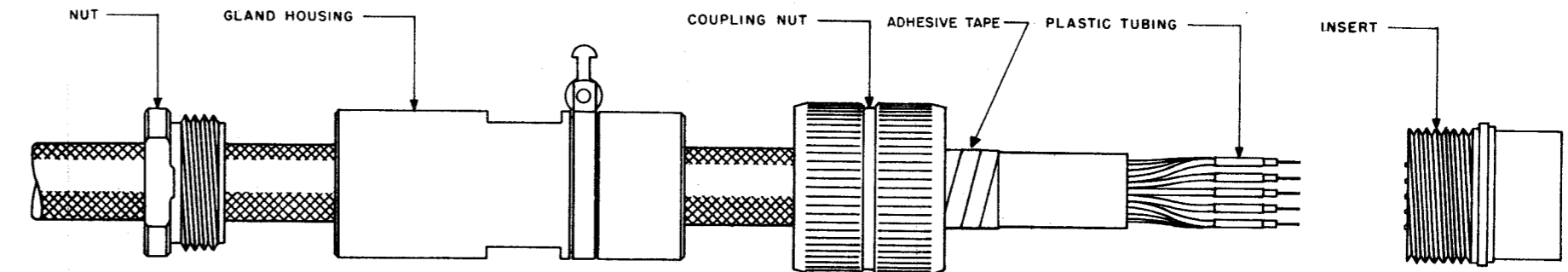
CABLE ACCESSORY ASSEMBLY
BENDIX IO-35952-244 OR
IO-35952-321



STRAIGHT PLUG
BENDIX IO-64624-28S OR
IO-64624-28P OR
IO-64632-8S OR
IO-64632-8P



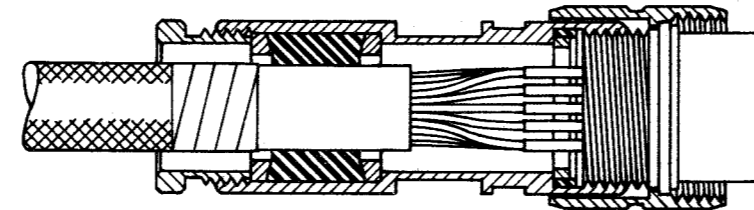
1. CUT AND TRIM ARMOR AND SHEATH FROM END OF CABLE AS SHOWN ABOVE. REMOVE FILLERS. STRIP INSULATION 1/4" FROM END OF EACH CONDUCTOR. TIN ENDS OF EACH CONDUCTOR.



2: DISASSEMBLE THE CABLE ACCESSORY ASSEMBLY AND THE STRAIGHT PLUG ASSEMBLY AND SLIDE THE NUT OVER THE CABLE. WET THE INSIDE OF THE GLAND IN THE GLAND HOUSING AND SLIP THE GLAND HOUSING OVER THE CABLE. SLIP COUPLING NUT OVER THE CABLE. SLIDE ONE SLEEVE OF 0.076" I. D. PLASTIC TUBING OVER EACH ACTIVE CONDUCTOR.

USING THE INTERCONNECTING CABLING DIAGRAMS AS A GUIDE, SOLDER EACH CONDUCTOR TO ITS PROPER TERMINAL. IF THE OPPOSITE END OF THE CABLE TERMINATES IN A LIKE TYPE CONNECTOR, EACH CONDUCTOR, AT OPPOSITE END, SHOULD BE CONNECTED TO TERMINALS WITH CORRESPONDING LETTERS. IF THE OPPOSITE END OF THE CABLE

TERMINATES AT A TERMINAL BOARD, EACH CONDUCTOR, AT THE OPPOSITE END, SHOULD BE CONNECTED TO TERMINALS WITH CORRESPONDING WIRE NUMBERS. SERVE END OF ARMOR WITH ADHESIVE TAPE.

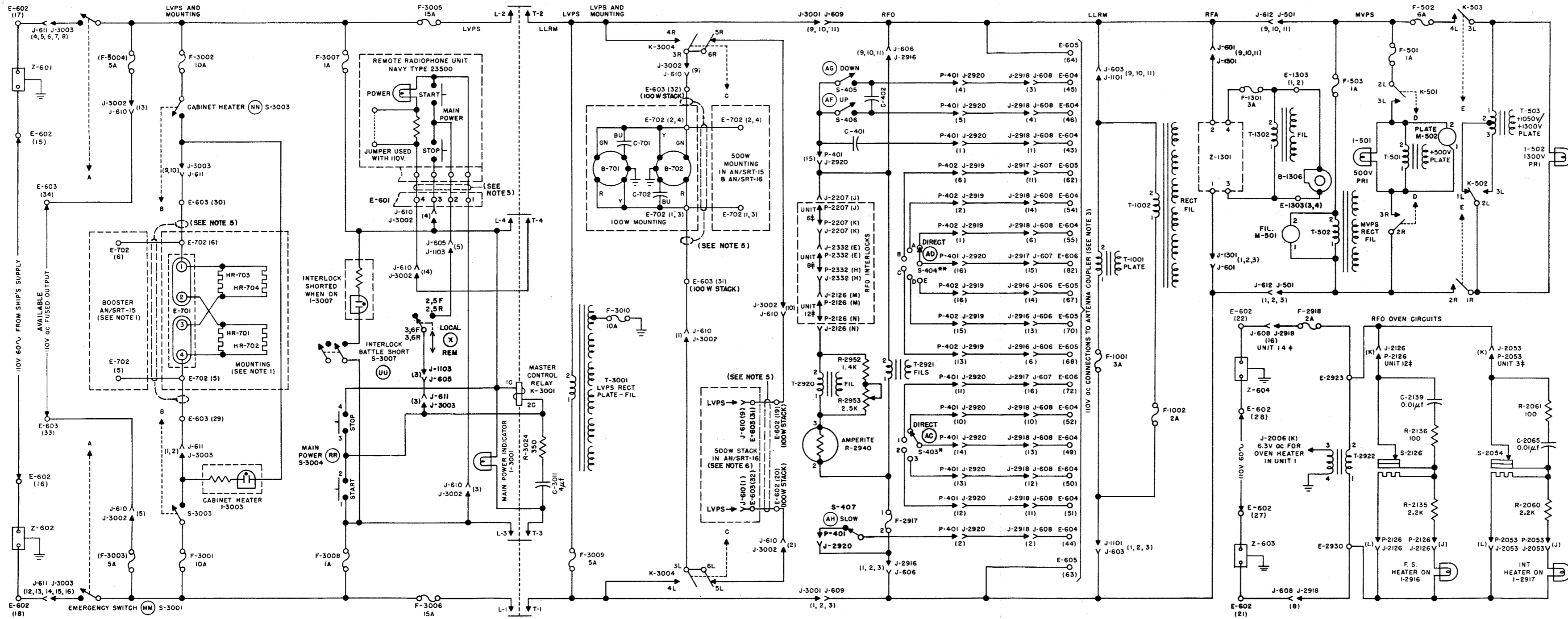


3: SLIDE PLASTIC TUBING DOWN OVER EACH TERMINAL AND SOLDER JOINT. PULL COUPLING NUT OVER INSERT. SLIDE GLAND HOUSING FORWARD UNDER THE COUPLING NUT AND

THREAD GLAND HOUSING SECURELY ON INSERT. SLIDE NUT FORWARD AND THREAD INTO GLAND HOUSING, TIGHTENING UNTIL GLAND PROVIDES WATER-TIGHT SEAL.

ASSEMBLY INFORMATION

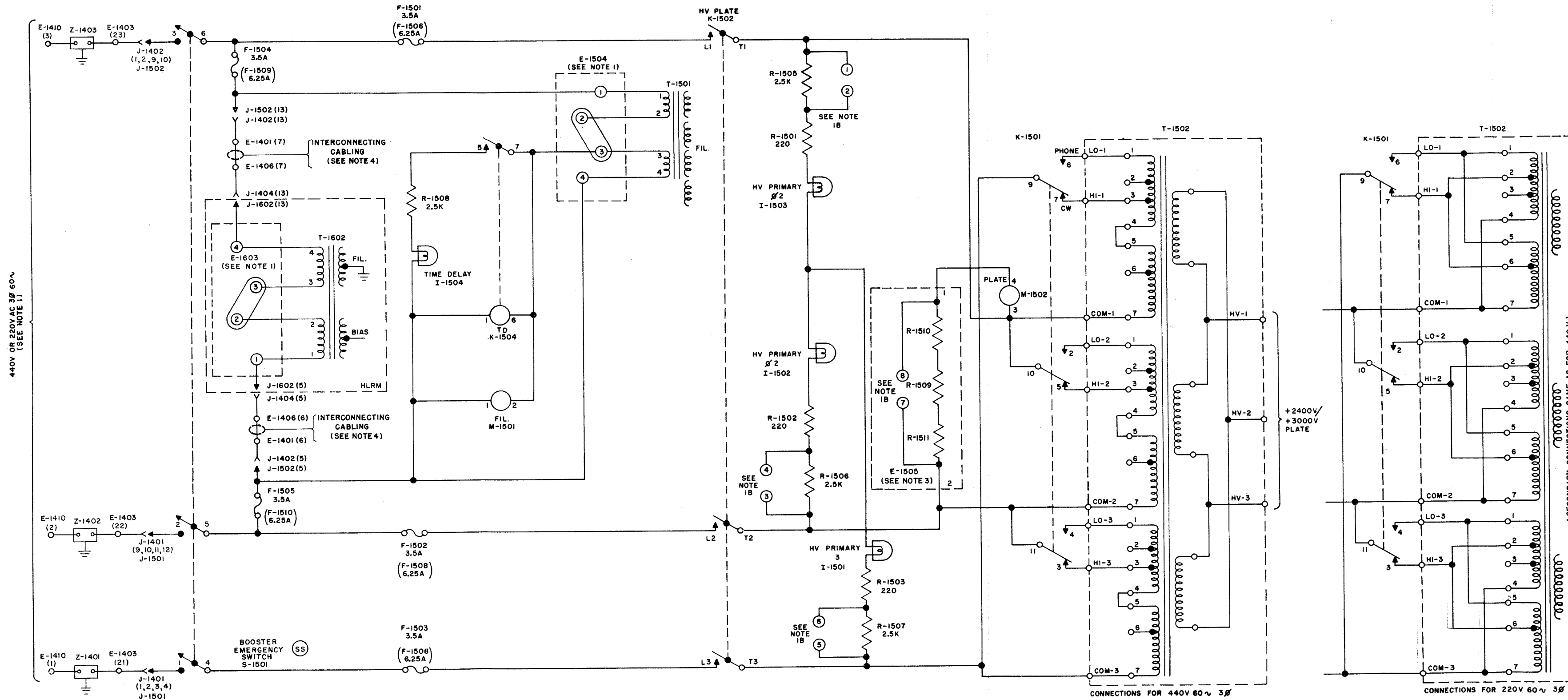
| CABLE NUMBER | | | CABLE TYPE | ASSEMBLES TO | | | |
|--------------|-----------|-----------|------------|--|-----------|--|--------|
| AN/SRT-14 | AN/SRT-15 | AN/SRT-16 | | END 1 | | END 2 | |
| | | | CONNECTOR | REF. SYMBOL | CONNECTOR | REF. SYMBOL | |
| R-RT6 | R-RT5 | R-RT7 | MSCA-19 | BENDIX IO-64624-28S IO-35952-244 | P-3302 | ----- | ----- |
| R-RT5 | R-RT4 | R-RT6 | MHFA-24 | BENDIX IO-64632-8S IO-35952-321 | P-3301 | ----- | ----- |
| R-RT8 | R-RT7 | R-RT9 | MSCA-19 | BENDIX IO-64624-28P IO-35952-244 | P-3303 | BENDIX IO-64624-28S IO-35952-244 | P-3305 |
| R-RT7 | R-RT6 | R-RT8 | MHFA-24 | BENDIX IO-64632-8P IO-35952-321 | P-3304 | BENDIX IO-64632-8S IO-35952-321 | P-3306 |



| ABBREVIATION | COMMON NAME | OFFICIAL DESIGNATION | SYMBOL GROUP |
|--------------|------------------------------------|----------------------|----------------------|
| LVPS | LOW VOLTAGE POWER SUPPLY | PP-1094/SRT | 3001-3099 |
| MVPS | MEDIUM VOLTAGE POWER SUPPLY | PP-1095/SRT | 501-599 |
| RFO | RADIO FREQUENCY OSCILLATOR | O-275/SRT | 401-499 2001-2999 |
| LLRM | LOW LEVEL RADIO MODULATOR | MD-229/SRT | 1001-1299 |
| RFA | RADIO FREQUENCY AMPLIFIER | AM-1008/SRT | 1301-1399 |
| | TRANSMITTER GROUP CABINET MOUNTING | CY-1571/SRT | 601-699 |
| | | MT-1423/SRT | |

- NOTES:
1. IN AN/SRT-16 THE HEATERS IN THE TWO MOUNTINGS ARE INDIVIDUALLY ENERGIZED FROM THE CABINET HEATER SWITCH (NN) IN EACH TRANSMITTER GROUP. IN AN/SRT-15 THE HEATERS IN THE TWO MOUNTINGS ARE IN PARALLEL.
 2. RESISTANCE VALUES EXPRESSED IN OHMS UNLESS OTHERWISE INDICATED.
 3. SEE PRIMARY POWER DISTRIBUTION DIAGRAM, ANTENNA COUPLER AND RADIO FREQUENCY TUNER FOR INTERCONNECTING DATA FOR PRIMARY FREQUENCY POWER BETWEEN TRANSMITTER GROUP AND ANTENNA COUPLER.
 4. COLOR CODE—R-RED, Y-YELLOW, GN-GREEN, BU-BLUE.
 5. DENOTES INTERCONNECTING CABLING. FOR DETAILS SEE INTERCONNECTING CABLING DIAGRAMS FIGURE 3-31 & FIGURE 3-32.
 6. OTHER CONNECTIONS IN 500 W STACK ARE THE SAME AS 100 W STACK.
- † UNIT 1, UNIT 3, UNIT 6, ETC. REFER TO PLUG-IN UNITS OF THE RADIO FREQUENCY OSCILLATOR, O-275/SRT
- * FRONT PANEL DESIGNATION OF S-403 IS AS FOLLOWS; TRANSFORMER (AC)
- ** FRONT PANEL DESIGNATION OF S-404 IS AS FOLLOWS; ANTENNA COUPLER LOADING (AD)

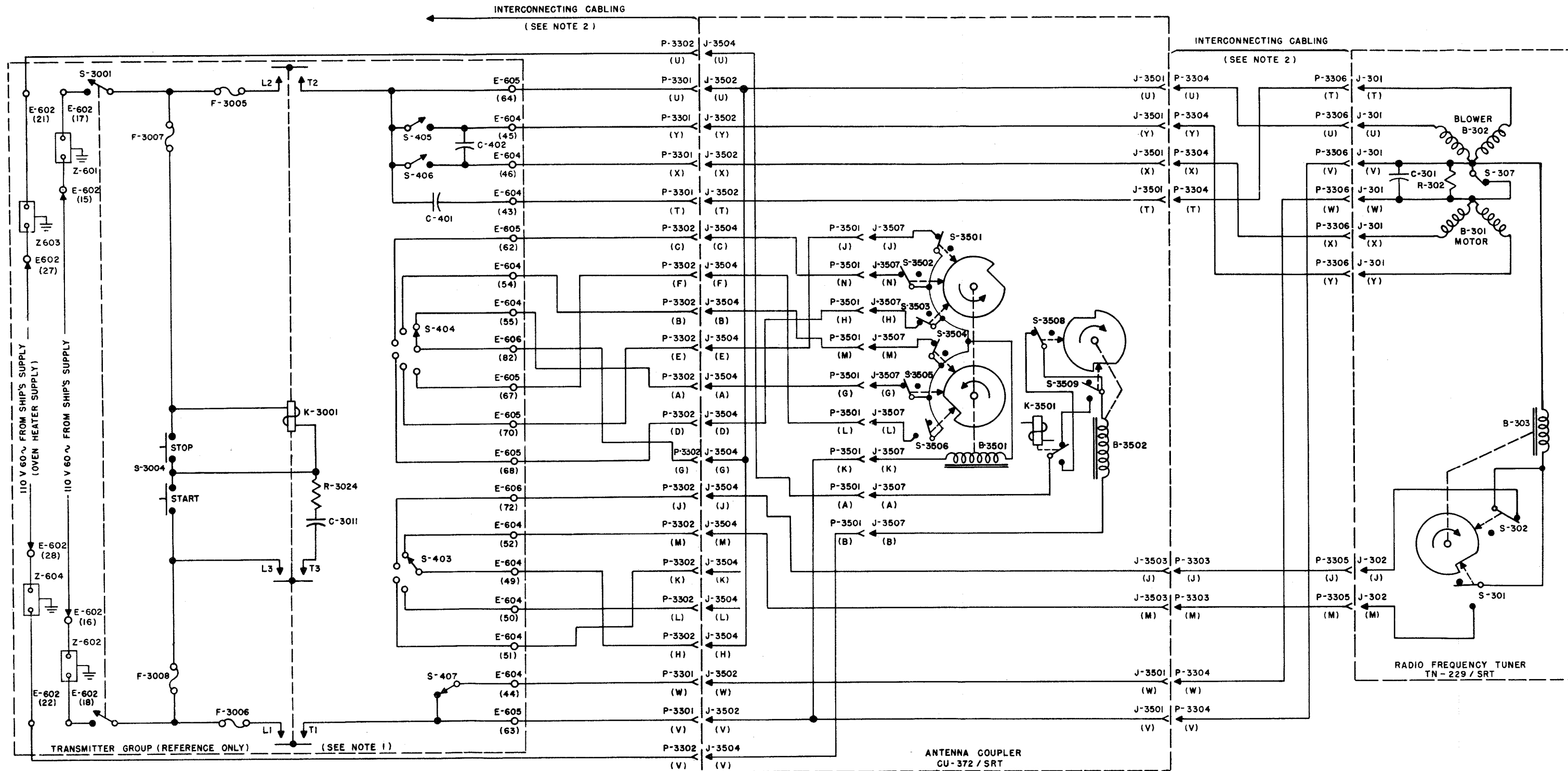
Figure 3-34. Primary Power Distribution Diagram, Transmitter Group and Mounting, AN/SRT-14, 15, and 16



| ABBREVIATION | COMMON NAME | OFFICIAL DESIGNATION | SYMBOL GROUP |
|--------------|----------------------------|----------------------|--------------|
| HVPS | HIGH VOLTAGE POWER SUPPLY | PP-1096/SRT | 1501-1599 |
| HLRM | HIGH LEVEL RADIO MODULATOR | MD-230/SRT | 1601-1699 |
| | HVPS CABINET | CY-1573/SRT | 1401-1499 |
| | HLRM CABINET | CY-1572/SRT | 1401-1499 |

- NOTES:
- CONNECTIONS SHOWN ARE FOR 440V 60 Hz 3φ PRIMARY POWER. FOR 220V 60 Hz 3φ SUPPLY, CHANGE AS FOLLOWS:
 - SUBSTITUTE COMPONENTS IN PARENTHESES.
 - SHORT R-1505, R-1506, R-1507, R-1508, R-1510 AND R-1511 WITH LINKS 1 THROUGH 8 ON LINK BOARD E-1503.
 - CONNECT LINK TERMINALS 1-3 AND 2-4 ON E-1504 AND E-1603.
 - CHANGE CONNECTIONS ON T-1502 AS SHOWN.
 - FUSES F-1501, F-1502, F-1503 (OR F-1506, F-1507, F-1509) ARE MOUNTED ON E-1502. FUSES F-1504, F-1505 (OR F-1509, F-1510) ARE MOUNTED ON E-1501.
 - RESISTORS R-1509, R-1510 AND R-1511 ON BOARD E-1505 ARE 3600 OHMS 2 WATTS EACH.
 - SEE INTERCONNECTING CABLING DIAGRAM FOR INTERCONNECTING DETAILS FIGURE 3-31

Figure 3-35. Primary Power Distribution Diagram, Radio Modulator-Power Supply (Booster), AN/SRT-15 and 16



- NOTES
1. SEE PRIMARY POWER DISTRIBUTION DIAGRAM, TRANSMITTER GROUP AND MOUNTING, FOR DETAIL OF CONNECTIONS FIGURE 3-34
 2. SEE INTERCONNECTING CABLING DIAGRAM FOR INTERCONNECTING DETAILS FIGURE 3-30

Figure 3-36. Primary Power Distribution Diagram, Antenna Coupler and R-f Tuner, AN/SRT-14, 15 and 16

★
NAVSHIPS 92121(A)

INSTRUCTION BOOK

for

RADIO TRANSMITTING SETS

**AN/SRT-14, AN/SRT-14A, AN/SRT-15,
AN/SRT-15A, AN/SRT-16 AND AN/SRT-16A**

SECTION 4
OPERATION

FEDERAL TELEPHONE AND RADIO COMPANY

A division of INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

CLIFTON, NEW JERSEY

DEPARTMENT OF THE NAVY
BUREAU OF SHIPS

★
*Contract: NObsr-52021
NObsr-52622*

Approved by BuShips: 26 October 1955

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SECTION 4
OPERATION

1. INTRODUCTION.

The following operating instructions presume that Radio Transmitting Set AN/SRT-14, 15 or 16 has been installed and checked by qualified personnel.

Note

The AN/SRT-14A, 15A and 16A are non-magnetic versions of the AN/SRT-14, 15 and 16 respectively. As the nonmagnetic versions vary from the standard types only in the material used for cabinet panels, all information on the operation of the AN/SRT-14, 15 and 16, as set forth in the following section, applies equally as well for the AN/SRT-14A, 15A and 16A.

Note

Where, throughout this section, reference is made to either low level radio modulator or high level radio modulator, it should not be interpreted as meaning the technique of modulation known as grid modulation or low level modulation, but rather as referring to the operating power level.

a. AN/SRT-14.—Radio Transmitting Set AN/SRT-14 has all controls necessary for accomplishing the transmission of any one of five different services at a nominal 100-watt output level. The frequency range of 0.3 to 26 mc, in steps of 10 cycles, is covered in six tuning bands. All frequency selection and tuning are manually accomplished at the site of the transmitter. The set is so constructed as to permit remote control and operation by means of a standard Navy 6-wire control system.

b. AN/SRT-15. (See figure 4-1.)—Radio Transmitting Set AN/SRT-15 has all the characteristics of AN/SRT-14. In addition, AN/SRT-15 may be operated at a nominal 500-watt level on any of the high-frequency bands covering the range from 2 to 26 mc.

c. AN/SRT-16.—Radio Transmitting Set AN/SRT-16 combines the characteristics of AN/SRT-14 and AN/SRT-15. AN/SRT-16 permits simultaneous transmission of the same service at different frequencies and of any two of the six services either at the 100-watt carrier level, or one at the 100-watt level and the other at the 500-watt level. AN/SRT-16 design permits remote control from two standard Navy 6-wire control systems.

d. TUNING BANDS.—At a 100-watt carrier level, AN/SRT-14, 15 and 16 radio transmitters cover the frequency range 0.3 to 26 mc in six bands.

| | | |
|-----------------------|---|--|
| Band 1. 0.3 to 0.8 mc | } | AN/SRT-14, 15, 16 |
| Band 2. 0.8 to 2 mc | | 100-watt level only. |
| Band 3. 2 to 5 mc | } | AN/SRT-14 |
| | | 100-watt level only. |
| Band 4. 5 to 11 mc | } | AN/SRT-15 |
| Band 5. 11 to 19 mc | | 100- or 500-watt level. |
| Band 6. 19 to 26 mc | } | AN/SRT-16 |
| | | 100-watt level only from one transmitter group, 100- or 500-watt level from other transmitter group. |

Frequency band selection is a function of setting up a frequency in the RFO and of tuning in the RFA, both of which are manual operations. In the AN/SRT-15 and 16 the control circuits are such that operation of the transmitter at the 500-watt level is prevented when bands 1 and 2 are selected.

e. SERVICES.—The AN/SRT-14, 15 and 16 radio transmitting sets are equipped for selecting any one of five modes of transmission.

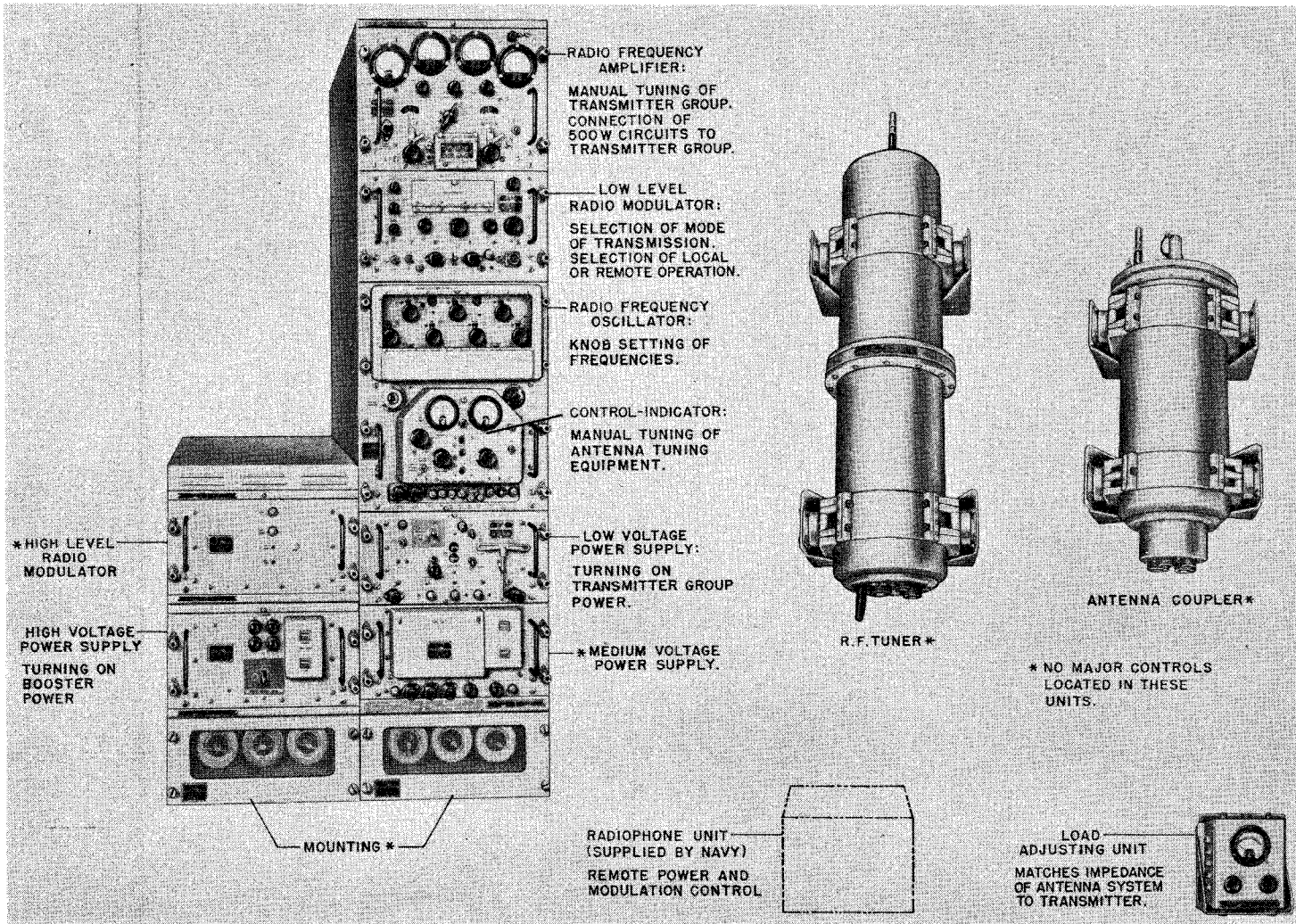
| Service Position | Function |
|------------------|------------------------------|
| (1) HAND | } Continuous-wave telegraphy |
| (2) MACHINE | |
| (3) FSK | Frequency-shift telegraphy |
| (4) FAX | Facsimile (picture) |
| (5) PHONE | Voice |

Each of the five services can be operated at either the high or low power levels.

f. FREQUENCY SELECTION.—Frequency selection is made manually by the setting of nine front panel controls located on the radio frequency oscillator of the transmitter group. In the AN/SRT-16, which has two transmitter groups and two antenna systems, separate frequencies can be set up and transmitted in each of the transmitter groups.

g. TUNING.—All tuning functions are manually accomplished by the operation of tuning controls in the radio frequency amplifier, load adjusting unit, and the control-indicator.

b. POWER CONTROL.—Primary power is fed to the transmitting sets through emergency switches located on the transmitter group low voltage power supply, and on the high voltage power supply (the latter in AN/SRT-15 and 16 sets only). With these switches ON, the sets may be started either by the start-stop push-button controls on the transmitter bay or from the radio-phone unit.



NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A

Figure 4-1. Location of Major Control Functions, AN/SRT-15.

i. MAJOR CONTROL FUNCTIONS.—Most of the controls and indicators of the AN/SRT-14, 15 and 16 are grouped together functionally to avoid confusion in operation. In this way, individual units may be associated with basic functions. Table 4-1 shows the major functions performed by the controls on each unit of the three radio transmitting sets. The radio modulator-power supply (booster) controls are only associated with the AN/SRT-15 and 16 sets.

TABLE 4-1. MAJOR CONTROL FUNCTIONS

| Functions | Unit |
|--|---|
| Transmitter Group OA-684/SRT | |
| Turning on transmitter group power. | Low Voltage Power Supply PP-1094/SRT (figure 4-6) |
| Selection of mode of transmission. | Low Level Radio Modulator MD-229/SRT (figure 4-3) |
| Knob setting of frequencies. | Radio Frequency Oscillator O-275/SRT (figure 4-4) |
| Selecting local or remote operation. | Low Level Radio Modulator MD-229/SRT (figure 4-3) |
| Manual tuning of the transmitter group. | Radio Frequency Amplifier AM-1008/SRT (figure 4-2) |
| Manual tuning of the antenna tuning equipment. | Control-Indicator C-1352/SRT (figure 4-4) |
| Output impedance matching. | Transmitter Coupler CU-402/SRT (figure 4-8) |
| Connection of 500-watt circuits to a transmitter group. | Radio Frequency Amplifier AM-1008/SRT (figure 4-2) |
| Radio Modulator-Power Supply (Booster) OA-685/SRT | |
| Turning on booster power. | High Voltage Power Supply PP-1096/SRT (figure 4-10) |
| Remote Control Units | |
| Turning on power, carrier control, and modulation. | Radiophone unit, Navy Type 23500 or equivalent. |

For location of the various controls of the transmitter bay, see figure 4-1.

j. OTHER CONTROL FUNCTIONS.—There are other controls on the AN/SRT-14, 15 and 16 sets that perform functions not associated with the usual operation of the units. There is a control for checking currents and voltages in the RFA, and another control on the RFA panel which resets the overload circuit. Some of the controls on the radio frequency oscillator (RFO) permit check up and alignment of the RFO circuits. On the front panel of the low voltage power supply (LVPS) are controls for heating the transmitter bay

under abnormally low temperatures, for placing it in a "stand-by" condition, and for bypassing the interlocks with a "battle short".

k. UNITS WITHOUT CONTROLS.—Five units of the AN/SRT-14, 15 and 16 radio transmitters have no front panel controls. These are as follows: Power Supply PP-1095/SRT (medium voltage power supply), Antenna Coupler CU-372/SRT, Radio Frequency Tuner TN-229/SRT, Radio Modulator MD-230/SRT (high level radio modulator), and Mounting MT-1423/SRT.

1. OPERATION PROCEDURE BASED ON AN/SRT-15.—For purposes of simplicity, the statement of operation procedure will be based on the AN/SRT-15 radio transmitting set. Whenever references to the AN/SRT-14 and AN/SRT-16 are required, they will be clearly identified.

2. IDENTIFICATION OF CONTROLS AND INDICATORS.

All controls and indicators associated with the operation of the AN/SRT-15 radio transmitting set are identified below, according to the individual units on which they are located.

a. RADIO FREQUENCY AMPLIFIER AM-1008/SRT.—The radio frequency amplifier (RFA) (figure 4-2) has controls for manually tuning Transmitter Group OA-684/SRT.

(1) OSCILLATOR INT-EXT SWITCH (A).—In normal operation, the INT-EXT switch (A) is placed in the INT position. This connects the output of the RFO to the input of the RFA. For purposes of corrective maintenance, alignment, etc., it might be desirable to connect an external source of r-f energy to the RFA. In this instance, switch (A) is placed in the EXT position and the output of the external source of r-f energy is connected through the EXT. OSC receptacle on the RFA front panel.

(2) BANDSWITCH (C), TUNE IPA (E), AND TUNE PA (D) TUNING CONTROLS.—The three tuning controls are reset with each change of transmitted frequency. The BANDSWITCH (C) is a rotary switch that is set to the band in which the transmitted frequency lies. The TUNE IPA control (E) is a continuous tuning control that is set according to the appropriate indication on the PA CURRENT meter with PA-METER SELECTOR switch (H) in the proper position. The TUNE PA control (D) is a similar continuous tuning control that also is set according to the indication on the PA CURRENT meter with PA-METER SELECTOR switch (H) in the proper position.

(3) PUSH FOR 500 W (E) AND DISABLE 500 W (F) SWITCHES.—In the AN/SRT-15 and AN/SRT-16, PUSH FOR 500 W (E) push-button switch, when depressed, places the transmitter group in 500-watt operation. With the transmitter in 500-watt operation, depressing the DISABLE 500 W (F) push-button switch returns the transmitter to the 100-watt level without having to take the transmitter off the air. In the AN/SRT-16, the booster is connected to only one

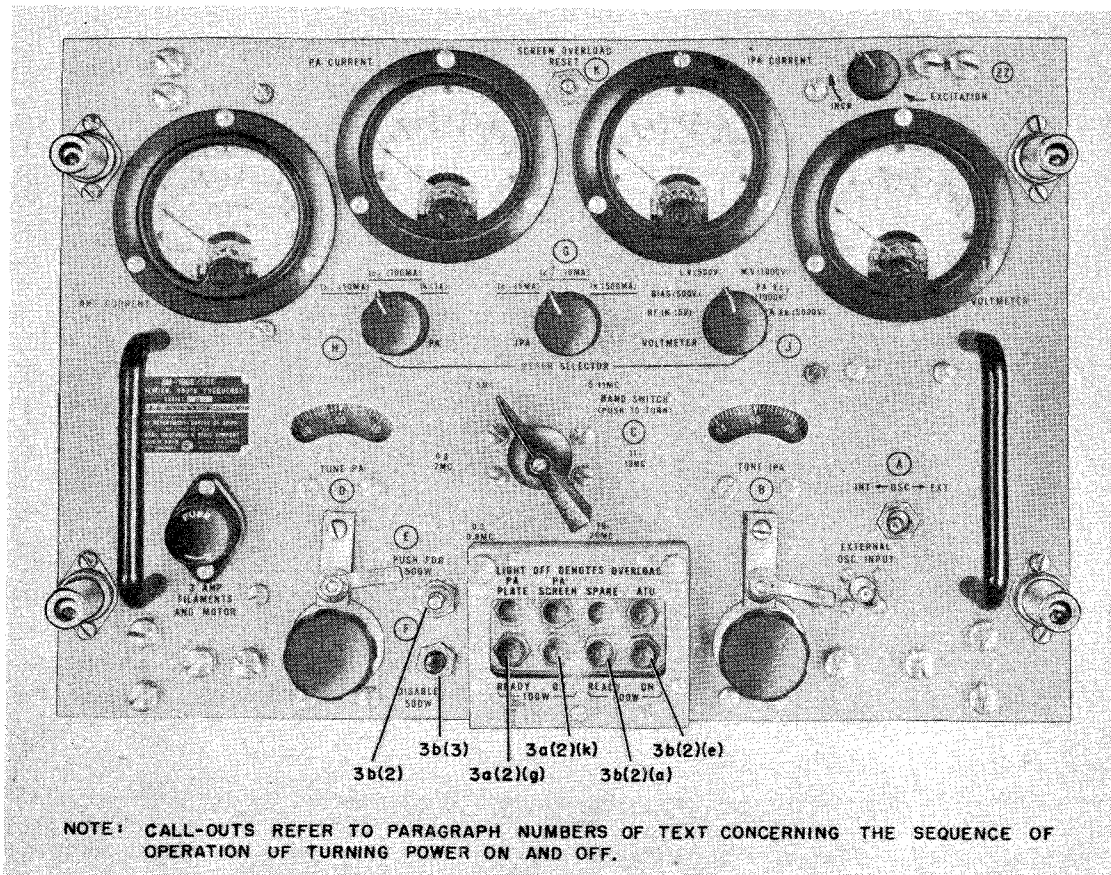


Figure 4-2. Radio Frequency Amplifier AM-1008/SRT (Radio Frequency Amplifier, RFA), Front Panel Controls and Indicators

of the two transmitter groups. Switches (E) and (F) of the transmitter group to which the booster is connected function as described for the AN/SRT-15, while the switches (E) and (F) in the transmitter group not connected to the booster are inoperative. Similarly, the switches (E) and (F) in the AN/SRT-14 are inoperative, as there is no booster.

(4) IPA (G), PA (H) AND VOLTMETER (J) METER SELECTOR SWITCHES AND IPA CURRENT METER, PA CURRENT METER AND VOLTMETER. —The three test meters with their corresponding selector switches perform the function of checking the r-f input voltage from the RFO, checking input d-c supply voltages, checking operating currents of the IPA and PA stages, and giving indications of tuning of the IPA and PA stages.

The PA METER SELECTOR (G) has three positions as follows:

| Position | Indication |
|-------------------------|--------------------------|
| I _{c1} (5 ma) | IPA control grid current |
| I _{c2} (10 ma) | IPA screen grid current |
| I _k (500 ma) | IPA cathode current |

The PA METER SELECTOR (H) has three positions as follows:

| Position | Indication |
|--------------------------|-------------------------|
| I _{c1} (50 ma) | PA control grid current |
| I _{c2} (100 ma) | PA screen grid current |
| I _k (1 A) | PA cathode current |

The VOLTMETER METER SELECTOR (J) has six positions as follows:

| Position | Indication |
|-----------------------------|--------------------------|
| RF IN (5 V) | RF input from RFO |
| BIAS (500 V) | —220 V d-c input supply |
| LV (500 V) | +300 V d-c input supply |
| MV (1000 V) | +500 V d-c input supply |
| PA E _{c2} (1000 V) | PA screen supply voltage |
| PA E _b (5000 V) | PA plate supply voltage |

In the nomenclature of all of the above meter selector switch positions, the figure in parentheses indicates the full scale reading of the meter for the corresponding position.

(5) SCREEN OVERLOAD RESET SWITCH (K).—In case the PA screen overload relay is energized because of excessive PA screen grid current when in 500-watt operation, the transmitter is returned to the 100-watt level. The overload is indicated by the PA SCREEN OVERLOAD lamp. When the cause of the overload is removed, depressing the SCREEN OVERLOAD RESET switch (K) restores the overload relay, and depressing the PUSH FOR 500 W (E) push button allows the transmitter to return to the 500-watt level.

(6) EXCITATION CONTROL (Z).—The input signal from the RFO varies in amplitude at the various frequencies. To compensate for this and for variances in output impedance of the PA, a control known as the EXCITATION control (Z) regulates the input level of signal from the RFO to prevent overdriving of the PA stage.

(7) INDICATOR LIGHTS.—There are eight indicator lights mounted on a panel in the lower center of the front panel. Three of these lights are overload indicators, four others indicate the condition of the carrier in either 100-watt or 500-watt operation, and the remaining light is a spare.

(8) ANTENNA CURRENT METER.—The ANT. CURRENT meter is placed in the output of the PA stage to give indication of amplitude of r-f line current at the output of the RFA.

(9) FUSE.—A 3-amp fuse is located on the front panel for protection of the blower motor in the RFA.

b. RADIO MODULATOR MD-229/SRT (LOW LEVEL RADIO MODULATOR).—The front panel of the low level radio modulator (LLRM) (figure 4-3) contains the following major control functions: selection of the mode of transmission, selection of local or remote transmission, and controls of audio modulator and keyer circuits.

(1) SERVICE SELECTOR CONTROL (U).—The mode of transmission of the transmitter group is determined by the manual setting of the SERVICE SELECTOR control (U). The control has five positions: HAND for hand-keyed cw, MACH for c-w keying originating from a machine-keying device such as teletype, FSK for frequency-shift keying from machine-keying equipment, FAX for facsimile transmission and phone for amplitude-modulated phone transmission. To prevent random bursts of transmission when the contacts are transferred during radio silence and to prevent switching of power supply circuits under load, a push-to-turn feature is incorporated in this switch.

(2) SQUELCH TRIG. CONTROL (L).—The SQUELCH TRIG. control (L) is used only when the SERVICE SELECTOR control (U) is in the PHONE position. When monitoring through SIDETONE jack, this control is adjusted to reduce the noise level between words to a minimum without sacrificing low level voice. The setting is a compromise between low level speech signals and the noise level during pauses in speech.

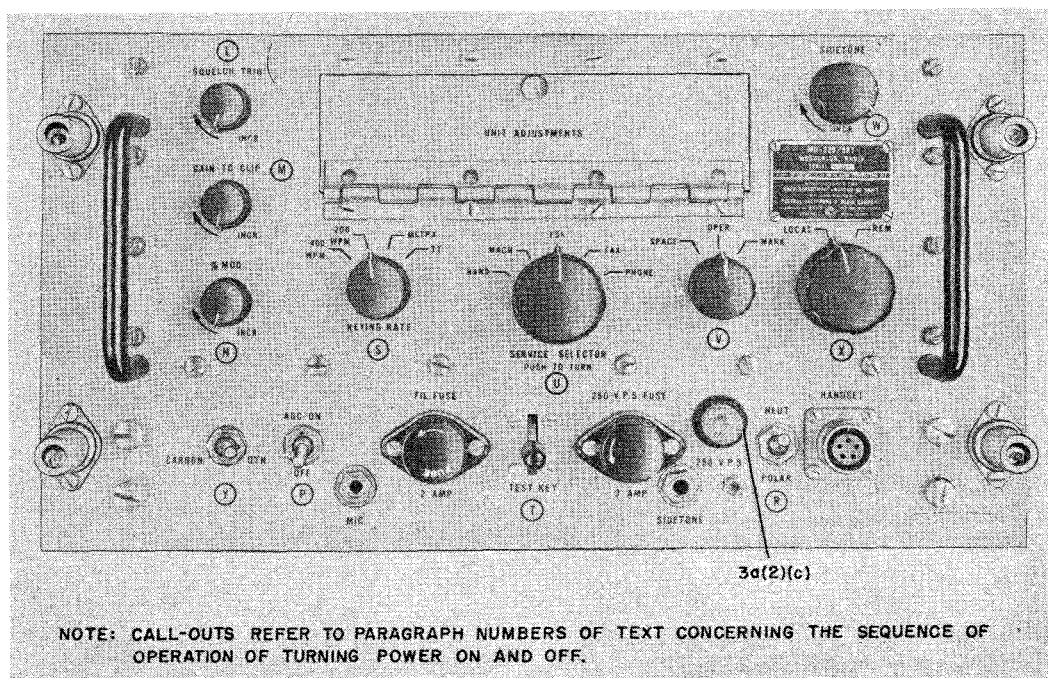


Figure 4-3. Radio Modulator MD-229/SRT (Low Level Radio Modulator, LLRM), Front Panel Controls and Indicators.

(3) GAIN TO CLIP CONTROL (M).—The GAIN TO CLIP control (M) also is used only when the SERVICE SELECTOR control (U) is in the PHONE position. This control is set according to operator preference for maximum signal fidelity without an excessively low signal-to-noise ratio.

(4) % MOD CONTROL (N).—The % MOD control (N) is another control used only in phone operation and is set for 100 percent modulation of the carrier by the audio signal.

(5) AGC SWITCH (P).—In phone operation, the AGC switch (P) is used to incorporate or bypass the automatic gain control circuit in the audio amplifier chain of the LLRM. With this switch in the ON position, variations in amplitudes of the output modulation are retained within a predetermined limit despite large variations in voice signal levels.

(6) NEUT.-POLAR SWITCH (R).—The NEUT.-POLAR switch (R) must be set according to the position of the SERVICE SELECTOR control (U) and the type of signal input available. With control (U) in HAND, FAX, or PHONE, the position of the NEUT.-POLAR switch (R) is immaterial. In the NEUT. position, the keying circuit accepts a keying voltage that varies from zero during space to a positive value for mark. In the POLAR position the circuit accepts a keying voltage that varies from a negative value for space to a positive value for mark. In the MACH and FSK positions of the SERVICE SELECTOR control (U), the NEUT.-POLAR switch (R) setting is determined by the nature of the incoming keying signal from the machine-keying equipment, which can be either neutral or polar as described above.

(7) KEYING RATE SWITCH (S).—The KEYING RATE switch (S) has four positions: TT, MLTPX, 200 WPM, and 400 WPM. The proper setting of the KEYING RATE switch (S) should be made in hand-key, machine-key or FSK operation, but has no purpose in facsimile or phone operation. The TT position is used for hand- or machine-key speeds up to approximately 60 words per minute. MLTPX is used for multiplex transmission from 60 to 150 words per minute. The 200 WPM position is used with high-speed tape keying between 150 and 300 words per minute. The 400 WPM position is used with high-speed tape keying rates between 300 and 600 words per minute.

This control is provided to minimize side-band frequencies. To maintain an optimum keying pulse waveshape, the amount of capacitance in the circuit is varied with the keying speed. Failure to put this control in the proper position will not prevent the keying operation, but it will affect the waveshaping and, therefore, the bandwidth required for transmission.

(8) TEST KEY (T).—The TEST KEY (T) is used for front panel checking or keying. The upper locking position and lower momentary position energize the keying circuits in the LLRM. With the equipment energized and tuned, operation of the test key will cause r-f output in all positions of the SERVICE SELECTOR (U).

Note

Always return TEST KEY (T) to the central or neutral position upon completion of checks or tests.

(9) SPACE-OPER.-MARK CONTROL (V).—During normal keying operation, the SPACE-OPER.-MARK control (V) is in the OPER. position, which allows regular keying signals from hand- or machine-key equipment to energize the keying circuit of the LLRM. Placing this control in either SPACE or MARK makes it possible to test the action of the keying circuit without causing r-f output. This testing can be performed regardless of the position of SERVICE SELECTOR (U).

(10) SIDETONE CONTROL (W).—The SIDETONE control (W) is used to regulate the volume of the signal from the sidetone amplifier. It is adjusted only when a sidetone signal is being used for monitoring.

(11) LOCAL-REM SWITCH (X).—The LOCAL-REM switch (X) is set depending on the location of the place of operation. For operation from the transmitter bay location, this switch must be in the LOCAL position. For operation from a remote radiophone unit, this switch must be in the REM position.

(12) CARBON-DYN SWITCH (Y).—For local phone operation only, the CARBON-DYN switch (Y) is set according to the type of microphone being used. As the level of signal from a dynamic microphone is less than from a carbon microphone, the CARBON-DYN switch (Y) adjusts the amplification in the audio chain to compensate for the different input levels.

(13) INDICATOR LIGHT.—There is one indicator light designated 250 V.P.S. which, when lit, denotes the energizing of the +250-volt regulated power supply, which is located in the LLRM. A front panel jack is also provided for measuring this voltage.

(14) FUSES.—Two fuses are provided, one for protection of overload of the +250-volt regulated supply, and the other to protect the supply that provides filament voltages for the tubes in the LLRM.

(15) TIME CONST. ADJ. CONTROL.—The TIME CONST. ADJ. control is set according to the operator's keying rate in hand-key transmission. The setting of this control is not an operational function but rather a maintenance control. Because of restrictions of front panel mounting space, this control is located on the preamplifier subchassis. To gain access to this control, the LLRM chassis must be pulled out from the cabinet a sufficient amount to reach the preamplifier subchassis. This subchassis is mounted on the top left front of the main LLRM chassis.

c. RADIO FREQUENCY OSCILLATOR O-275/SRT.—The radio frequency oscillator, RFO (figures 4-4 and 4-5), contains all controls for the manual selection of a frequency and other controls for the adjustment of operation of certain circuits within the RFO. The Control-Indicator C-1352/SRT, included as a com-

ponent of the RFO, has controls and indicators for the manual tuning of the antenna tuning equipment.

(1) ZERO ADJ. SWITCH (Z).—The ZERO ADJ. switch (Z) is used in connection with the ZERO BEAT INDICATOR, the INT. OSC. ZERO ADJ., and F.S. OSC ZERO ADJ. controls. The outputs of the frequency shift oscillator (unit 12) and the interpolation oscillator (unit 3) within the RFO should each be 100 kc. Placing the ZERO ADJ. switch (Z) in the INT. OSC. position connects the output of the interpolation oscillator to the zero beat indicator circuit where it is compared with the standard 100-kc signal from the crystal-controlled 100-kc oscillator (unit 1). The output of the interpolation oscillator can be regulated by the INT. OSC. ZERO ADJ. control, located behind the door that covers the frequency selection knobs. The electron ray tube ZERO BEAT INDICATOR gives the indication of the variance in frequency between the standard and the interpolation oscillator signal. Placing the ZERO ADJ. switch (Z) in the F.S. OSC. position connects the output of the fre-

quency shift oscillator into the zero beat indicator circuit and permits the output of the frequency shift oscillator to be compared and adjusted in the same manner as described previously for the interpolation oscillator.

(2) FREQUENCY SELECTION KNOBS.—There are nine frequency selection knobs for the manual selection of a frequency to be transmitted (figure 4-5). They are located behind a door on the RFO front panel. This door must be opened to change a frequency setting. Incorporated in the opening of the door is a safety device that prevents the transmitter from having a 500-watt carrier on while the door is open. The nine control knobs are designated: (AA) KNOB control, (BB) KNOB control, KC (CC) control knob, 100 ~ (DD) control knob, 10 ~ (EE) control knob, BAND (FF) control knob, MC (GG) control knob, 100 KC (HH) control knob, and 10 KC (JJ) control knob. These knobs are set for the frequency desired according to instructions inscribed on the front panel. After the selection has been made, the door is closed.

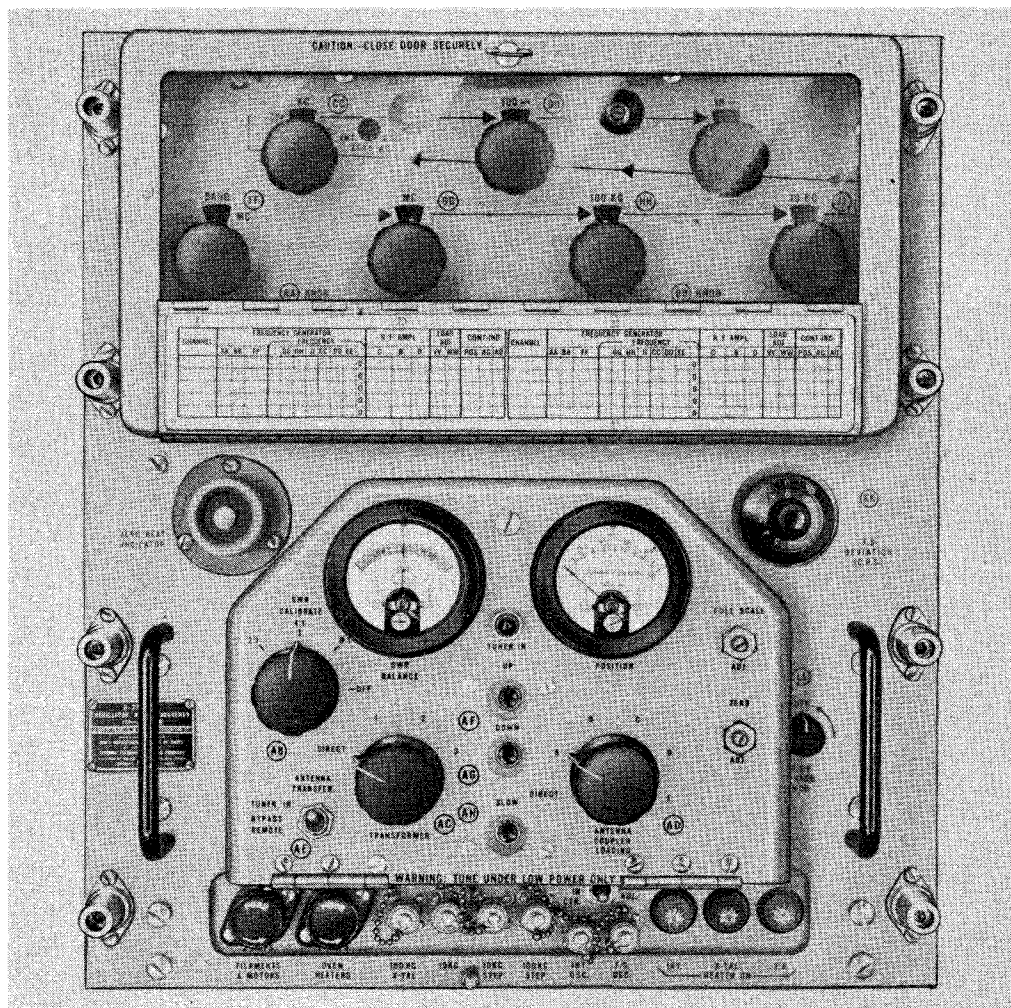


Figure 4-4. Radio Frequency Oscillator O-275/SRT (Radio Frequency Oscillator, RFO), Front Panel Controls and Indicators

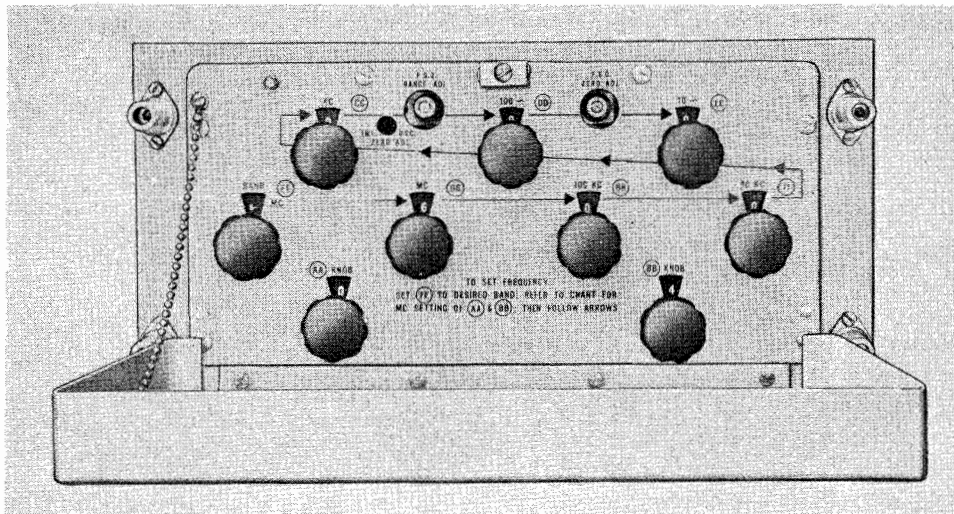


Figure 4-5. Radio Frequency Oscillator O-275/SRT (Radio Frequency Oscillator, RFO) Frequency Selection Panel Controls

(3) F.S. DEVIATION CONTROL (K).—When in FSK operation, the F.S. DEVIATION control (K) is set according to the degree of frequency shift desired between space and mark. This control consists of two concentric dials. The outer dial is connected to the knob, which is rotated by hand, the inner dial follows at a 1-to-10 ratio. The inner dial is calibrated in hundreds of cycles (0-10), whereas the outer dial is calibrated in cycles (0-100). Therefore, number 1 on the inner dial represents 100 cycles. One complete clockwise turn of the outer dial produces a clockwise rotation of one number on the inner dial. The combined reading of the dials gives, in cycles per second, the shift of the carrier frequency above and below the nominal frequency for FSK operation. For example, consider the frequency selection knobs set to provide a carrier frequency of 20.000000 mc and F.S. DEVIATION control (K) set so the dials read 4 on the inner dial and 50 on the outer dial (450 cps) and the SERVICE SELECTOR (U) in the LLRM set at FSK. A space keying signal will shift the carrier to 19.999550 mc, and a mark signal will shift the carrier to 20.000450 mc. In FAX operation, the dial reading represents half of the deviation derived from a maximum facsimile signal. Paragraph 2f(3) of Section 2 provides a more complete description of the effect of the F.S. DEVIATION control (K). The F.S.O. RANGE ADJ. control, located behind the door which covers the frequency selection knobs, calibrates the effect of F.S. DEVIATION control (K) so that dial readings in cps are correct.

(4) F.S.K. PHASE MOD. CONTROL (L).—In FSK and FAX operation a 200-cps signal is generated in the LLRM and fed to the frequency shift oscillator (unit 12) in the RFO to phase-modulate the output of the frequency shift oscillator to combat the effect of selective fading (see paragraph 7e(8) of Section 2). The degree of shift is proportionate to the amplitude of the 200-cps signal input to the frequency shift oscillator.

The F.S.K. PHASE MOD. control (L) regulates the degree of the phase shift. Full clockwise rotation of this control will produce a maximum one-radian phase shift.

(5) TEST RECEPTACLES, INDICATORS, AND FUSES.—Across the bottom of the RFO is a set of test receptacles, indicator lights, and fuses. The test receptacles bring out several of the outputs of the subunits within the RFO for purposes of examination with a standard test oscilloscope. The three indicator lights are heater indicators of the three oscillator circuits in the RFO, which have ovens to stabilize their ambient temperatures. The operation of any of these indicators means that the temperature of the corresponding oven has fallen below its minimum and that the corresponding heat element has been switched on by its thermostat. These lights will go on and off intermittently, the rate being solely dependent on the ambient temperature. There are two fuses, one being in the a-c line supply to the RFO filament supplies and the other in the a-c line provided for the oven heater supply.

(6) CONTROL-INDICATOR C-1352/SRT.—The control-indicator, mounted on the RFO front panel, has all controls and indicators required to manually tune the two components of the antenna tuning equipment, namely, Radio Frequency Tuner TN-229/SRT and Antenna Coupler CU-372/SRT.

(a) UP (AF), DOWN (AG), SLOW (AH) PUSH BUTTONS AND POSITION INDICATOR.—The main tuning component of the antenna tuning equipment is a length of helically wound transmission line. The length of this line is varied by positioning a sliding short. The sliding short is positioned by a tuning motor, which, in turn, is controlled by the UP (AF), DOWN (AG), and SLOW (AH) push buttons. Depressing the (AF) control causes the sliding short to move up on the tuning coil, while depressing the (AG) control causes the short to move down. Depressing the SLOW control (AH) together with either the (AF) or (AG) control will cause

movement of the sliding short in the desired direction at a reduced speed for fine tuning. The POSITION meter indicates the position of the sliding short on the tuning coil, with a reading of 100 on the meter indicating the short at the top of the coil and 0 indicating the short at the bottom. The FULL SCALE ADJ. and ZERO ADJ. screwdriver adjustments are used to calibrate the POSITION meter.

(b) ANTENNA COUPLER LOADING SWITCH (A).—To extend the range of tuning of the main tuning coil, it is possible to add certain values of inductance or capacitance in series or shunt with the main tuning coil. With ANTENNA COUPLER LOADING switch (A) in DIRECT, no reactive components are added. With (A) in its other positions, A through E, a selection of one of five different types and values of loading is possible. Table 4-2 shows the tuning component employed for each position of the ANTENNA COUPLER LOADING (A) SWITCH (S-404).

TABLE 4-2. FUNCTION OF ANTENNA COUPLER LOADING SWITCH (A) (S-404)

| Position of S-404* | Loading Component Used |
|--------------------|------------------------------------|
| Direct | None |
| A | Capacitance in series |
| B | Capacitance in series and in shunt |
| C | Inductance in series |
| D | Inductance in series |
| E | Capacitance in shunt |

* Positions of S-404 correspond to same positions of the loading switch S-3511 on Antenna Coupler CU-372/SRT.

(c) TRANSFORMER SWITCH (AC).—At low frequencies, when the reflected resistance of the antenna on the transmission line is low, a "step-up" impedance transformer must be placed in the transmission line. Placing the TRANSFORMER control (AC) in position 1 switches the impedance transformer in, while placing (AC) control in its DIRECT position switches the transformer out. Positions 2 and 3 of the (AC) control are inoperative.

(d) ANTENNA TRANSFER SWITCH (AE) AND TUNER IN INDICATOR.—Placing the ANTENNA TRANSFER switch (AE) in the BYPASS position switches all the tuning components out of the transmission line and connects the antenna directly to the load adjusting unit. With (AE) in the TUNER IN position the tuning components are in the transmission line. With (AE) in the REMOTE position the tuning components are automatically switched in and out under control of the keying signals when the transmitter is operated in either HAND or PHONE. Paragraph 6a (step 18) of this section and paragraph 7g of Section 2 of this instruction book explain this operation in more detail. Whenever the tuning components are switched into the transmission line, the TUNER IN indicator will be energized.

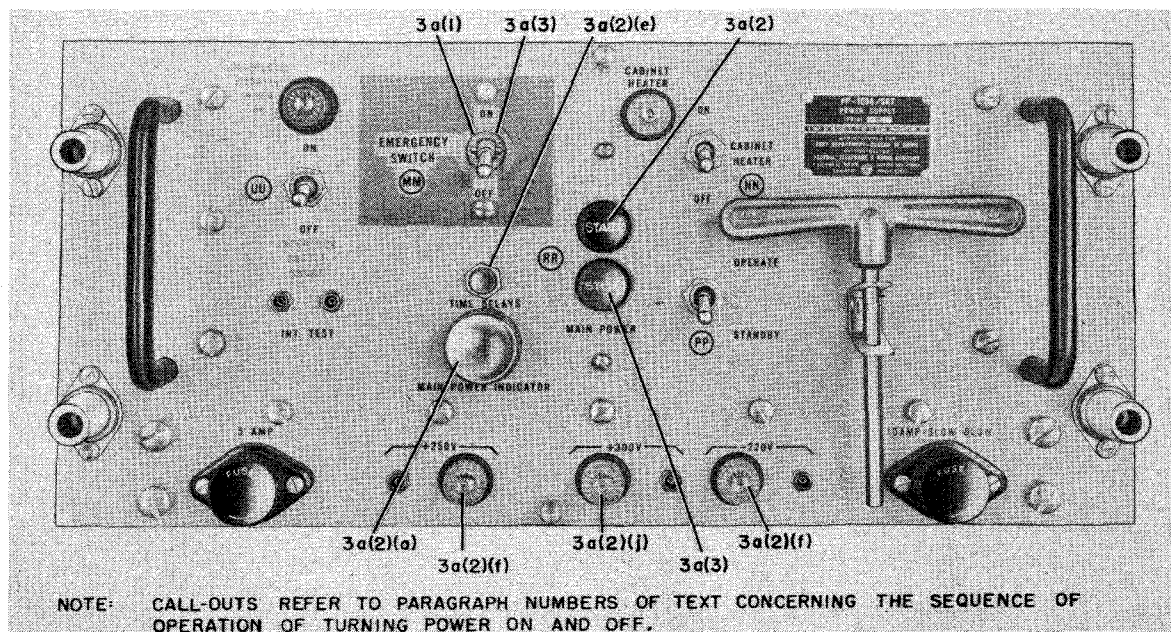
(e) SWR BALANCE INDICATOR AND SWR CALIBRATE SWITCH (AB).—The indication for proper tuning of the antenna is obtaining the lowest possible standing-wave ratio (SWR) on the transmission line at the output of the transmitter. While the circuit for measuring the SWR is in the load adjusting unit, the indicator, SWR BALANCE meter, is located on the control-indicator. With the SWR CALIBRATE switch (AB) in the 8:1 position, a center reading on the SWR BALANCE meter will indicate an SWR of 8:1, reading to the right of center indicating an SWR greater than 8:1, while an indication to the left of center is less than 8:1. Similarly, with the (AB) control in the 4:1 and 2:1 positions, center readings on the SWR BALANCE meter will indicate an SWR of 4:1 and 2:1, respectively.

d. POWER SUPPLY PP-1094/SRT (LOW VOLTAGE POWER SUPPLY).—The low voltage power supply, LVPS (figure 4-6), has front panel controls that accomplish three functions: energize the transmitter, heat the transmitter bay internally, and place the radio transmitting set in a "stand-by" condition. In addition, the front panel of this unit has fuses for control and B+ voltages, and also six indicator lamps to show the degree to which the equipment has been energized. The "T" handle key used to loosen or secure the captive screws holding the drawers in the frame is also mounted on the low voltage power supply front panel.

(1) EMERGENCY SWITCH (EM).—The function of this switch is to connect primary power to the equipment terminals and energize the MAIN POWER START-STOP push-button circuits. EMERGENCY SWITCH (EM) must be turned on before depressing the MAIN POWER START push button if the transmitter group is to be energized. EMERGENCY SWITCH (EM) should be kept ON unless maintenance procedures or certain routine checks are being made.

(2) MAIN POWER CONTROL (RP).—The START STOP push buttons of the MAIN POWER control (RP) are used to start or stop an AN/SRT-14, 15 or 16 radio transmitting set. If the emergency switches (EM and ES) are on, depressing the START button of this switch will energize the entire equipment. Failure to have the EMERGENCY SWITCH on in the low voltage power supply will prevent the MAIN POWER control from energizing the transmitter group only. Failure to turn on the emergency switch on the booster prevents the MAIN POWER switch from energizing the booster only. Depressing the MAIN POWER-STOP push button will turn off equipment power.

(3) STANDBY-OPERATE SWITCH (SP).—The STANDBY-OPERATE switch (SP) has two positions. If equipment power is turned on when this switch is in the OPERATE position, plate power will be applied after the time delay in the LVPS has run out in hand-key operation. Plate power will also be applied and the carrier will be on in machine-key, FSK, and facsimile operation if the keying line is closed. In phone, depressing the press-to-talk button will apply plate power and turn the carrier on. With STANDBY-OPERATE



NOTE: CALL-OUTS REFER TO PARAGRAPH NUMBERS OF TEXT CONCERNING THE SEQUENCE OF OPERATION OF TURNING POWER ON AND OFF.

Figure 4-6. Power Supply PP-1094/SRT (Low Voltage Power Supply, LVPS), Front Panel Controls and Indicators

switch (P) in the STANDBY position, turning the equipment power on will energize the filament power in the transmitter group, but plate power will not be present and hence no carrier will be on.

(4) CABINET HEATER SWITCH (N).—The CABINET HEATER switch (N) controls the heating elements installed in the sides of each mounting to heat the transmitter bay during conditions of low ambient temperature. This switch is normally off. However, if room temperature is between -1°C . ($+30^{\circ}\text{F}$.) and $+10^{\circ}\text{C}$. ($+50^{\circ}\text{F}$.), this switch should be turned on for 15 minutes prior to the actual operation of the equipment. If the room temperature is under -1°C . ($+30^{\circ}\text{F}$.), this switch should be kept on as long as the room temperature is below -1°C . ($+30^{\circ}\text{F}$.). The CABINET HEATER indicator light glows when the heaters are turned on.

Note

In an AN/SRT-16 the heaters of each transmitter group are independently energized by the CABINET HEATER (N) switches in the respective transmitter groups. Both CABINET HEATER (N) switches must be on to energize the heaters in both groups.

(5) BATTLE SHORT SWITCH (U).—BATTLE SHORT switch (U) is used as an emergency measure only to bypass the action of the drawer interlocks in case of failure of these interlocks.

(6) MISCELLANEOUS INDICATOR LIGHTS AND TEST JACKS.—The $+250\text{V}$, -220V , and $+300\text{V}$ indicator lights are illuminated when the corresponding voltages are supplied; they are used as servicing aids

to isolate power supply troubles. Trouble-shooting these circuits is facilitated by the provision of a front-panel jack for each of these voltages to enable the operating personnel to make voltmeter readings. The MAIN POWER indicator light indicates the presence or absence of primary power in the MAIN POWER START-STOP push-button circuits. The TIME DELAY indicator light comes on after the filament time delay has run out, and the transmitter is ready for application of complete control and plate voltages. The BATTLE SHORT indicator lights when the BATTLE SHORT switch (U) is on with the EMERGENCY SWITCH on also. INT. TEST jacks provide an access for testing the continuity of the drawer interlocks.

(7) FUSES.—The 10 AMP. fuse on the lower right of the front panel protects all d-c control voltages. Failure of this fuse will prevent the TIME DELAY indicator light from lighting. The 5 AMP fuse on the lower left limits total current for the d-c control supplies and for the $+250\text{V}$, -220V , and $+300\text{V}$ supplies. Its failure will prevent the corresponding indicator lights from coming on.

e. POWER SUPPLY PP-1095/SRT (MEDIUM VOLTAGE POWER SUPPLY).—The front panel of the medium voltage power supply, MVPS (figure 4-7), mounts four indicator lights, two elapsed time meters, 3 fuses, one test point, a set of spare fuse holders. Two indicator lights (red for the a-c input, neon for the d-c output) are provided for each of the power supplies, $+500\text{V}$ dc and $+1,050/+1,300\text{V}$ dc, which are contained in this unit. One of the elapsed time meters indicates the total hours of filament operation, the other shows total hours of plate power on. One fuse limits the total filament current drawn by the two power sup-

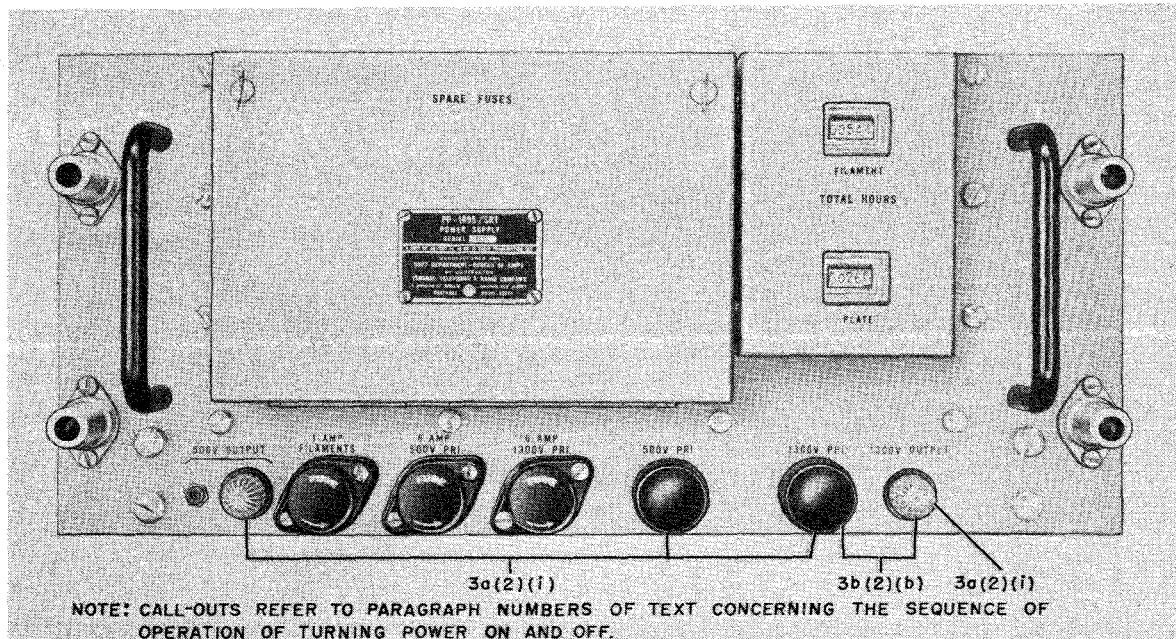


Figure 4-7. Power Supply PP-1095/SRT (Medium Voltage Power Supply, MVPS), Front Panel Controls and Indicators

plies, another fuse limits current drawn from the +500-volt supply, and the third fuse limits the drain from the +1,050/+1,300-volt supply. A front panel test jack is supplied to measure the output voltage of the +500-volt supply. A set of spare fuses for the various major units is provided under a hinged cover which is on the front panel.

f. TRANSMITTER COUPLER CU-402/SRT (LOAD ADJUSTING UNIT).—The load adjusting unit (LAU) (figure 4-8) has two controls and one indicator. The INPUT TAP (V) and OUTPUT TAP (W) controls select input and output taps on an impedance transformer that is inserted in the transmission line between the transmitter output and the antenna tuning equipment to further match the impedance presented to the transmitter output to the characteristic 50-ohm value. The r-f ammeter measures transmission line current at the output of the load adjusting unit.

g. RADIO MODULATOR MD-230/SRT (HIGH LEVEL RADIO MODULATOR).—The high level radio modulator (HLRM) (figure 4-9) is a unit of the transmitter bay for AN/SRT-15 and 16 radio transmitting sets. There are two indicator lights and two test points on this unit. The upper indicator light, marked 3000 V, comes on when the +2,400/+3,000-volt supply in the high voltage power supply is energized, and the plate voltage is applied to the final stage of the RFA. It will not light during 100-watt operation. The 350 V SCREEN indicator light comes on when the press-to-talk button is depressed during phone operation. The two test points are used in maintenance operations to check grid voltage on the two amplifier tubes in this unit.

b. POWER SUPPLY PP-1096/SRT (HIGH VOLTAGE POWER SUPPLY).—The high voltage power supply (HVPS) (figure 4-10) is a unit of the AN/SRT-15 and 16 radio transmitting sets. One control, two elapsed time meters, and four indicator lights are mounted on its front panel.

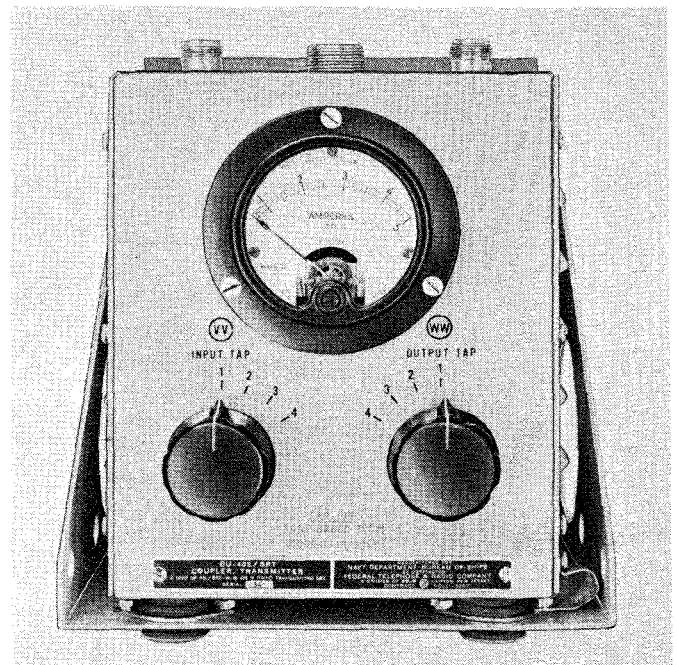


Figure 4-8. Transmitter Coupler CU-402/SRT (Load Adjusting Unit, LAU), Front Panel Controls and Indicators

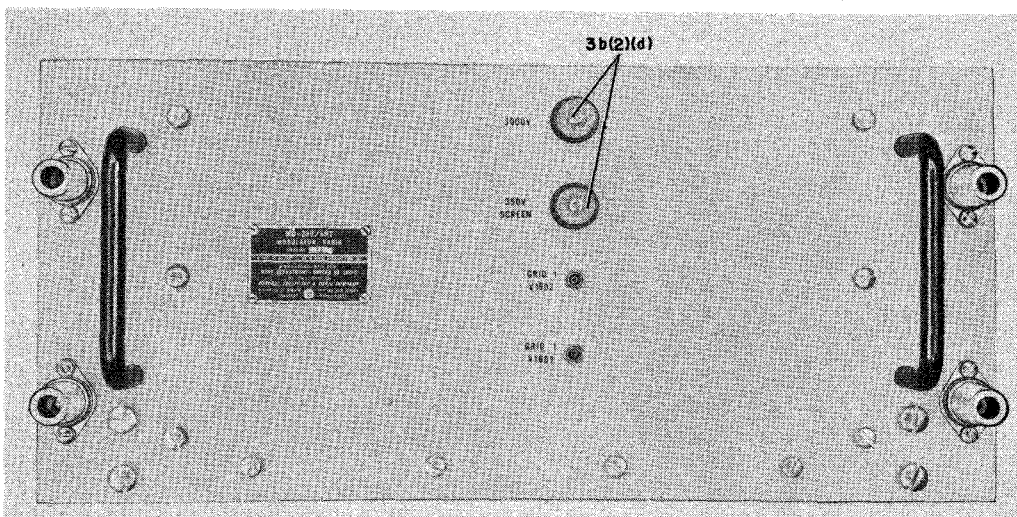


Figure 4-9. Radio Modulator MD-230/SRT (High Level Radio Modulator, HLRM), Front Panel Controls and Indicators

(1) BOOSTER EMERGENCY SWITCH (S).— This power switch is turned on whenever 500-watt operation of the AN/SRT-15 and 16 sets is desired. Turning this switch on energizes tube filaments in the HLRM and HVPS units. Unless it is desired to operate at 500 watts, this switch should be turned off.

CAUTION

Be certain this switch is OFF before attempting maintenance procedures.

The three H.V. PRIMARY and the TIME DELAY indicator lamps are associated with the operation of this switch. The three H.V. PRIMARY indicator lights show the presence or absence of primary power in each of the three phases of the supply line.

(2) ELAPSED TIME METERS.—One elapsed time meter indicates the total hours of booster filament operation, the other total hours of booster plate power operation.

3. TURNING POWER ON AND OFF.

The sequence of operation, together with the indication given, for the turning of power on and off is given below. The front panel drawings, figures 4-2 through 4-10, inclusive, have call-outs that refer to the paragraph numbering that follows as an aid in the distinguishing of the sequence of control operation.

a. TRANSMITTER GROUP OA-684/SRT.—All the controls for turning the transmitter group power on are located on the low voltage power supply (LVPS).

(1) Turn EMERGENCY SWITCH (S) on.

(2) Depress START push button of MAIN POWER switch (P).

When the main power is on, the following events should take place immediately.

(a) The MAIN POWER indicator light on the LVPS panel is energized.

(b) The blower motor in the RFA starts operating.

(c) The -12-volt and the +250-volt regulated power supplies in the LLRM energize, which energizes the 250 V.P.S. indicator in the LLRM.

(d) The filament supplies in all units are energized.

After approximately 25-30 seconds, the following occurs:

(e) The LVPS time delay expires and the TIME DELAY indicator light on the LVPS energizes.

(f) The +250 V and -220 V indicator lights on the LVPS energize, denoting the presence of the corresponding supply voltages.

(g) The CARRIER-100W-READY indicator on the RFA energizes.

(h) The blower motors in the mounting start operating.

If the STANDBY-OPERATE switch (P) in the LVPS is in the STANDBY position, there will be no plate power and nothing further will happen. However, if the equipment is in the OPERATE condition and the SERVICE SELECTOR (U) in the LLRM is set to HAND, the following will occur:

(i) The +500-volt and the +1,050/+1,300-volt supplies, together with the 500 V PRI., 500 V OUTPUT, 1300 V PRI., and 1300 V OUTPUT indicator lights in the MVPS are energized.

(j) The +300 V indicator light in the LVPS energizes, denoting the presence of this supply voltage.

(k) The CARRIER-100W-ON indicator light in the RFA goes on.

The above (i) through (k) will occur when the SERVICE SELECTOR Ⓢ is in the MACH, FSK, and FAX positions only if the keying line is closed. If the SERVICE SELECTOR Ⓢ is in the PHONE position, (i) through (k) will occur only when the press-to-talk button on the phone is depressed.

(3) Power in the transmitter group may be turned off by depressing the STOP push button on the MAIN POWER switch Ⓡ or by throwing the EMERGENCY SWITCH Ⓢ to the OFF position. The latter control removes all power, while the MAIN POWER SWITCH Ⓡ STOP push button removes all power except that to the mounting heaters.

b. RADIO MODULATOR-POWER SUPPLY OA-685/SRT.—The radio modulator-power supply (booster) is energized only when it is desired to have the AN/SRT-15 or 16 radio transmitting sets operate at the 500-watt level. To energize the booster, the transmitter group must be energized, and the STANDBY-OPERATE switch Ⓢ be in the STANDBY position. The booster now may be energized as follows:

(1) Turn BOOSTER EMERGENCY switch Ⓢ on the HVPS panel to the ON position. After a 30-second time delay, the TIME DELAY indicator light is energized.

(2) The PUSH FOR 500 W button ⓔ on the RFA is now depressed to operate a transmitter group at the 500-watt level. In the AN/SRT-16 only, one

transmitter group can be operated at the 500-watt level. The selection of which group can be operated at either 100 watts or 500 watts is made at the time of installation when the output of the booster is permanently interconnected to one of the transmitter groups. When the PUSH FOR 500 W button ⓔ is depressed, the following occurs:

(a) The CARRIER-500W-READY indicator on the RFA is illuminated.

At this time filament power has been applied to the booster but there will be no plate power. By now placing the equipment in the OPERATE condition and having the SERVICE SELECTOR Ⓢ in the LLRM set to the HAND position, the following will occur:

(b) The +1,050/+1,300-volt supply in the MVPS is de-energized and the 1300 V PRI and 1300 V OUTPUT indicator lights are extinguished.

(c) The $\phi 1$, $\phi 2$, and $\phi 3$ H.V. PRIMARY indicator lights on the HVPS are energized.

(d) The 3000 V and 350 V SCREEN indicator lights on the HLRM are energized, denoting the presence of these supplies.

(e) The CARRIER-500W-ON indicator is energized in the RFA.

Note

If tuning is required, it should be done at the 100-watt level.

(3) To turn the booster off, the DISABLE 500 W push button ⓕ on the RFA may be depressed, which de-energizes the plate power only in the booster. Turn-

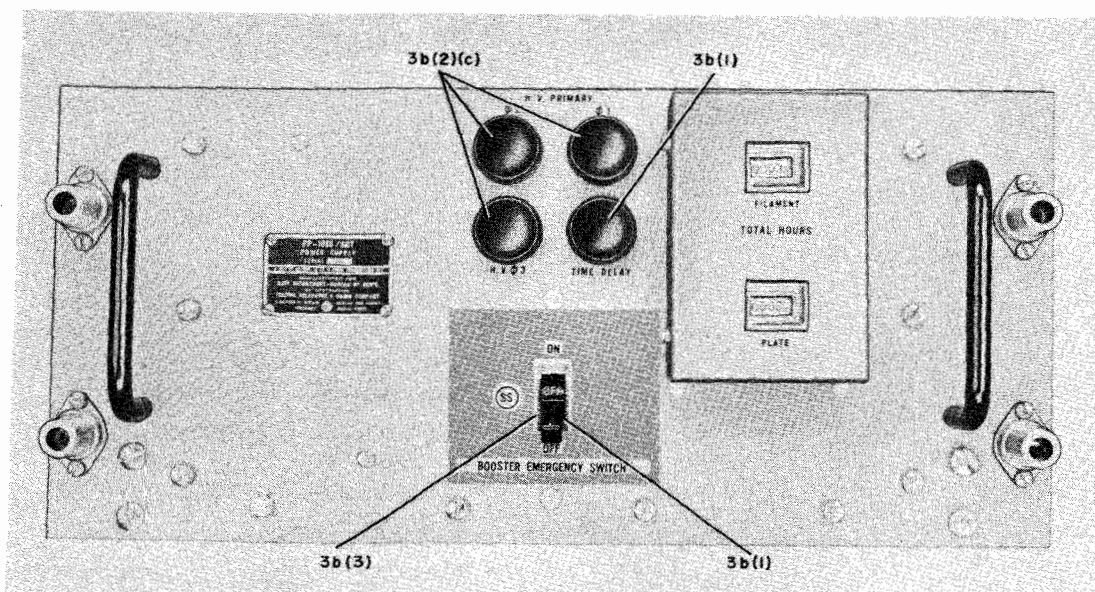


Figure 4-10. Power Supply PP-1096/SRT (High Voltage Power Supply, HVPS), Front Panel Controls and Indicators

ing the BOOSTER EMERGENCY switch (S) to OFF removes both filament and power in the booster. If the transmitter group power is turned off as described in paragraph 3a(3) while booster power is still on, plate power will be removed from the booster also.

4. SELECTING A SERVICE.

The AN/SRT-14, 15 and 16 radio transmitting sets have five modes of transmission: hand key, machine key, FSK, facsimile and phone. The controls for selecting any one of these services are found on the LLRM panel. These adjustments may be made before or after radio transmitter power has been turned on.

a. HAND-KEY OPERATION.

The following TIME CONST. ADJ. control setting is normally a function of maintenance procedure.

(1) Depress SERVICE SELECTOR switch (U) and turn it to HAND. (See figure 4-3.) Be certain this switch does not remain depressed after the transfer is completed.

(2) Set KEYING RATE switch (S) to TT for hand keying.

(3) Place POLAR-NEUT. switch (R) in the NEUT. position.

(4) Loosen the captive screws on the LLRM front panel and pull out the LLRM chassis until the TIME CONST. ADJ. control, R-1134, on the preamplifier subchassis becomes accessible. "Cheat" the LLRM drawer interlock. With the transmitter on in the "stand-by" condition, turn the TIME CONST. ADJ. full counterclockwise. Operate the TEST KEY (T) at the operator's normal keying speed. Relay K-1102 will operate at the start of transmission and will possibly drop out during pauses between words. The TIME CONST. ADJ. is regulated clockwise until K-1102 will no longer drop out during these pauses at the operator's normal keying rate. As K-1102 is a sealed relay, the indications of K-1102 dropping out must be noted by ear.

b. MACHINE-KEY OPERATION.

(1) Depress SERVICE SELECTOR switch (U) and turn to MACH. Be certain this switch does not remain depressed after the transfer is completed.

(2) Set KEYING RATE switch (S) to TT for use with a single teleprinter or to MLTPX for multiplex operation. For high-speed tape keying set switch to 200 WPM for rates between 150 and 300 words per minute or to 400 WPM for rates between 300 and 600 words per minute.

(3) Place POLAR-NEUT. switch (R) in the NEUT. or POLAR position, according to the type of input signal available from the machine-key equipment.

c. FSK OPERATION.

(1) Depress SERVICE SELECTOR switch (U) and turn it to FSK. Be certain this switch does not remain depressed after the transfer is completed.

(2) Unscrew the lock in the center of F.S. DEVIATION control (K). To obtain a desired frequency shift, divide total desired shift by two and set control (K) to this latter value.

(3) Place POLAR-NEUT. switch (R) in the NEUT. or POLAR position according to the type of input signal available.

(4) Set KEYING RATE switch (S) to TT for use with a single teleprinter or to MLTPX for multiplex operation. For high-speed tape keying set switch to 200 WPM for rates between 150 and 300 words per minute or to 400 WPM for rates between 300 and 600 words per minute.

(5) Under conditions of selective fading, it may be desirable to supplement the frequency shift with a 200-cycle phase modulation. In this case, F.S.K. PHASE MOD. control (L) should be turned clockwise approximately 60° from its counterclockwise limit.

d. FACSIMILE OPERATION.

(1) Turn SERVICE SELECTOR switch (U) to FAX.

(2) Loosen the center lock on F.S. DEVIATION control (K) and set this control to the required number of cycles in accordance with the following formula:

$$\text{F.S. Deviation Setting} = \frac{\Delta f}{2} \times \frac{20}{V_{\max} - V_{\min}}$$

$$(\Delta f = f_{\max} - f_{\min})$$

Figures for f , V_{\max} and V_{\min} are specified by the photo transmission equipment. For example, if Δf is 900 cycles, V_{\max} is 20 and V_{\min} is 5:

$$\text{F.S.D. Setting: } \frac{900}{2} \times \frac{20}{20-5} = 600 \text{ cycles}$$

Lock F.S. DEVIATION control (K) in place.

(3) Set frequency control knobs to the assigned carrier frequency in accordance with the following formula:

$$\text{Frequency setting} = \text{Carrier Freq.} - \frac{\text{F.S.D. Setting}}{20} (V_{\max} + V_{\min})$$

For example, if V_{\max} is 20, V_{\min} is 5, Δf is 900 cycles (F.S. DEVIATION setting would be 600 cycles), and the carrier frequency is to be 15,950,900 cycles:

$$\text{Frequency setting} = 15,950,900 - \frac{600}{20} (20 + 5) = 15,950,150 \text{ cycles}$$

Note

If computed frequency ends in a number other than 10 cycles (for example, 15,950,153 cycles), set the carrier to the nearest 10 cycles (that is, 15,950,150 cycles). Frequency control knobs can be set only to the nearest 10 cycles.

e. PHONE OPERATION.

(1) Turn SERVICE SELECTOR control (U) to PHONE.

(2) Set CARBON-DYN switch (Y) according to the type of microphone used. (Typical handsets are Navy Type H-51/U with carbon microphone and Navy Type H-52/U with dynamic microphone.)

(3) Turn SQUELCH TRIG control (L) clockwise to the point of least noise level consistent with adequate depth of modulation. While making this adjustment, monitor the output either with sidetone or handset receiver or as described in 4e(7).

(4) Turn AGC switch (P) on.

(5) Turn GAIN TO CLIP control (M) for best volume level.

Having this control set improperly may cause abnormal modulation of the voice signal. Refer to Section 7, Maintenance, for a detailed adjustment procedure for this control.

(6) The % MOD control (N) is set for 100 percent modulation by referring to the percent modulation adjustment procedures indicated in the maintenance section. There should be no need to adjust % MOD control as an operating control.

(7) To monitor microphone output, plug earphones into the SIDETONE jack. Control the volume of the earphones with the SIDETONE control (W).

Note

When using handset, excessive sidetone level may cause feedback to the microphone with consequent audio howl.

f. HIGH-SPEED OR TAPE KEYING.—This type of operation may be used when SERVICE SELECTOR switch (U) is in either MACH or FSK position if an external keying voltage is provided and the signal is fed in on the machine-key input lines. When using high-speed or tape keying, set KEYING RATE switch (S) to 200 WPM for rates between 150 and 300 words per minute and to 400 WPM for rates between 300 and 600 words per minute.

Note

To avoid unwanted carrier radiation when SERVICE SELECTOR (U) is in MACH, FSK, or FAX, place the equipment in "stand-by" until the start of transmission. When operated locally, the STANDBY-OPERATE switch (PP) placed in STANDBY position will keep transmitter in "stand-by". When operated remotely, with the STANDBY-OPERATE switch (PP) in OPERATE, the transmitter is placed in "stand-by" by keeping the keying line open.

5. SELECTING A FREQUENCY.

A set of nine frequency selection knobs are located behind a transparent door on the RFO front panel (figure 4-5). These knobs are designated (AA) KNOB, (BB)

KNOB, BAND (FF), MC (GG), 100 KC (HH), 10 KC (JJ), KC (CC), 100 ~ (DD), and 10 ~ (EE).

To set up a frequency the first step is to open the transparent door. The above-mentioned control knobs permit the manual selection of any frequency in 10-cycle steps from 0.3 mc to 26 mc. The dial readings corresponding to the 100 KC control knob (HH) down through the 10 ~ control knob (EE) designate directly the significant figures of the frequency setting through the 100 KC setting. The selection of the correct megacycle setting requires the regulating of the (AA) KNOB control, (BB) KNOB control, BAND control knob (FF) and the MC control knob (GG). The following table shows the setting of (AA), (BB), (FF), and (GG) according to the megacycle value of the output frequency desired.

TABLE 4-3. FINAL OUTPUT FREQUENCIES AND (AA), (BB), (FF), AND (GG) CONTROL POSITIONS

| RFO Output Freq. (mc) | (AA) Control Position | (BB) Control Position | (FF) Control Position | (GG) Control Position |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 0.3-1 | 0 | 10 | 0.3-6 mc | * |
| 1-2 | 0 | 9 | | * |
| 2-3 | 0 | 8 | | * |
| 3-4 | 0 | 7 | | * |
| 4-5 | 0 | 6 | | * |
| 5-6 | 1 | 10 | | * |
| 6-7 | 0 | 4 | 6-16 mc | 6 |
| 7-8 | 1 | 8 | | 7 |
| 8-9 | 0 | 3 | | 8 |
| 9-10 | 0 | 2 | | 9 |
| 10-11 | 1 | 5 | | 0 |
| 11-12 | 1 | 4 | | 1 |
| 12-13 | 2 | 8 | | 2 |
| 13-14 | 2 | 7 | | 3 |
| 14-15 | 2 | 6 | | 4 |
| 15-16 | 3 | 10 | | 5 |
| 16-17 | 3 | 9 | 16-26 mc | 6 |
| 17-18 | 3 | 8 | | 7 |
| 18-19 | 2 | 3 | | 8 |
| 19-20 | 1 | 1 | | 9 |
| 20-21 | 3 | 5 | | 0 |
| 21-22 | 3 | 4 | | 1 |
| 22-23 | 0 | 1 | | 2 |
| 23-24 | 3 | 3 | | 3 |
| 24-25 | 3 | 2 | | 4 |
| 25-26 | 2 | 0 | | 5 |

*In the 0.3-6-mc band the position of (GG) is immaterial.

As an example, to set up a frequency of 16.589450 mc, the following knob settings must be made: (AA) to 3, (BB) to 9, (FF) to 16-26 mc, (GG) to 6, (HH) to 5, (JJ) to 8, (CC) to 9, (DD) to 4, and (EE) to 5.

Note

The highest frequency (26 mc) is obtained by setting the knob to 25.9999910, with the 10 ~ knob (EE) set to the 10 position.

The selection of a frequency should be made with the power off or with the power on and the transmitter in the "stand-by" condition. Opening the door to change a frequency incorporates a safety feature that prevents the transmitter from being in 500-watt operation while this door is open.

6. TUNING OPERATIONS.

The system tuning of the components of the transmitter group and the associated antenna tuning equipment is normally accomplished by the regulation of controls in three of the units of the Transmitter Group OA-684/SRT. These components are the Radio Frequency Amplifier AM-1008/SRT (radio frequency amplifier), the Transmitter Coupler CU-402/SRT (load adjusting unit), and the Control-Indicator C-1352/SRT (a sub-unit of Radio Frequency Oscillator O-275/SRT). A tuning chart is available on the RFO front panel (figure 4-4) which provides space for recording the settings of all frequency selection and tuning controls for 10 pre-established channels. However, to establish these settings for the first time or operate at a frequency other than a pre-established one, a more defined procedure must be followed. Also a calibration chart on the RFO governs settings of controls on the control-indicator, assuming the equipment works into a standard Navy 35-foot whip antenna. If this type of antenna is not used, this calibration chart must be disregarded and a more detailed procedure followed for adjusting the controls of the control-indicator.

a. TUNING TO AN UNCALIBRATED FREQUENCY.—The following will cover the tuning procedure in detail to tune the equipment to a frequency that has not been previously calibrated. This procedure does presume, however, that a standard Navy 35-foot whip antenna is used.

Step 1. Place STANDBY-OPERATE switch (PP) in STANDBY on LVPS and check LOCAL-REM switch (X) for LOCAL position.

Step 2. Select the service desired as per paragraph 4.

Step 3. Turn transmitter group power on as per paragraph 3.

Step 4. If required, select a new frequency in the RFO in accordance with paragraph 5.

Step 5. Set the BANDSWITCH (C) in the RFA to the band in which the selected frequency falls.

Step 6. Set the EXCITATION (Z) control in the RFA at its maximum clockwise setting.

Step 7. On the under side of the hinged flap, which is mounted on the door covering the frequency selection knobs on the RFO is a tuning chart (figure 4-11) used for presetting the controls on the control-indicator. If the tuning chart indicates BYPASS for the selected frequency, the ANTENNA TRANSFER (AE) control should be set to BYPASS, and no further tuning will be required on the control-indicator. For other frequencies, set the TRANSFORMER (AC) control and the ANTENNA COUPLER LOADING (AD) control to the positions indicated under the XFMR and COUP columns, respectively, of the tuning chart according to the frequency being transmitted. The (AE) control should be set to the TUNER IN position. Set SWR CALIBRATE (AB) control to 8:1.

Step 8. Set both the INPUT TAP (V) and the OUTPUT TAP (W) on the load adjusting unit to position 4.

Step 9. Place STANDBY-OPERATE (PP) switch in OPERATE.

Step 10. Throw the TEST KEY (T) on the LLRM to its locking position, which will energize a carrier.

Step 11. With the VOLTMETER-METER SELECTOR (J) in the RF IN position, the voltmeter reading should not exceed 5 volts. If it does, adjust the EXCITATION (Z) control to reduce the reading to 5 volts maximum.

Step 12. Loosen the dial lock of the TUNE IPA (B) control. Set the TUNE IPA (B) control for maximum output of the buffer and IPA stages. Maximum tuning of these stages is indicated by maximum PA grid drive as shown by a maximum reading on the PA CURRENT meter in the RFA with the PA-METER SELECTOR (H) in the I_{c1} position. In tuning, two peaks may be noted on the PA CURRENT meter. The TUNE IPA (B) control should be set to the peak at the lowest TUNE IPA dial reading to insure that the tuning is to the desired

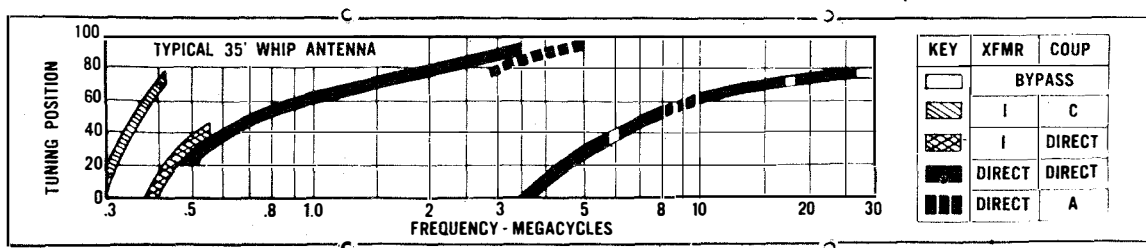


Figure 4-11. Tuning Chart on Radio Frequency Oscillator Front Panel

frequency and not to the second harmonic thereof. Tighten the dial lock.

Step 13. Loosen the dial lock of the TUNE PA \textcircled{D} control. Set TUNE PA \textcircled{D} control for maximum output of the PA stage. Maximum tuning of this stage is indicated by maximum reading on the PA CURRENT meter with PA-METER SELECTOR \textcircled{H} in the I_{c2} position. As with TUNE IPA, TUNE PA control \textcircled{D} should be set at the peak at the lowest TUNE PA dial reading. If the meter reading should go "off scale", adjust the EXCITATION \textcircled{Z} control to bring meter reading "on scale".

Step 14. On the control-indicator, depress the UP \textcircled{AF} button until POSITION meter reads 100. Depress DOWN \textcircled{AG} button until the indicator on the SWR BALANCE meter shows a dip towards the low (green) area.

Note

The calibrations 8:1, 4:1, and 2:1 on the SWR CALIBRATE \textcircled{AB} meter denote that, when the indicator of the SWR BALANCE meter reads 0 (center of scale), the standing-wave ratio on the line will be either 8:1, 4:1, or 2:1, depending on the setting of \textcircled{AB} . A reading in the green area of the meter indicates a SWR lower than the indicated center reading value, while a reading in the red area of the meter indicates a SWR of a higher value than the center reading.

Jog the UP \textcircled{AF} and the DOWN \textcircled{AG} buttons, holding the SLOW \textcircled{AH} button depressed until a maximum left-hand deflection is found. As the jogging is done the SWR CALIBRATE \textcircled{AB} control should be set to 4:1 for a more sensitive tuning indication. If the SWR BALANCE meter still reads near the left-hand end of the scale, change the setting of \textcircled{AB} to 2:1.

Note

If the tuning chart designates that ANTENNA TRANSFER \textcircled{AE} control be set to BYPASS (see paragraph 6a, step 7), the tuning procedure described above in paragraph 6a, step 14, is not required.

Step 15. If, upon completion of the tuning adjustments described in the previous paragraph, the SWR BALANCE meter indicates a SWR higher than 2:1, adjust the positions of both the INPUT TAP \textcircled{V} and the OUTPUT TAP \textcircled{W} on the load adjusting unit, to improve the SWR reading. If no improvement of SWR is obtained, after trying all combinations of \textcircled{V} and \textcircled{W} control settings, return both the \textcircled{V} and \textcircled{W} controls to the initial position 4.

Step 16. The TUNE PA \textcircled{D} control on the RFA should be "touched up" for optimum reading on the r-f ammeter on the load adjusting unit to compensate for the changes in output impedance caused by the tuning

of subsequent components after the first setting of TUNE PA \textcircled{D} control. Tighten the dial lock.

Step 17. With the PA-METER SELECTOR \textcircled{H} in the I_{c2} position, check the PA screen grid current. If the reading is in excess of 70 ma, adjust the EXCITATION \textcircled{Z} control to reduce the value to 70 ma. If the reading is below 70 ma, and if the \textcircled{Z} control is not in the fully clockwise position, increase \textcircled{Z} to approach a reading of 70 ma, making sure RF IN reading on the VOLTMETER does not exceed 5 volts.

Note

If operating at the 500-watt level in an AN/SRT-15 or AN/SRT-16, the PA I_{c2} reading should be checked again for possible further readjustment of the EXCITATION \textcircled{Z} control.

Step 18. The integrated tuning of the transmitter and its associated antenna tuning equipment is now complete. Restore the TEST KEY \textcircled{T} on the LLRM to its normal off position. If the equipment is to be operated either in HAND or PHONE, and the automatic "bypass" feature is desired, place the ANTENNA TRANSFER \textcircled{AE} control in the REMOTE position after tuning is completed. This allows automatic bypassing of the antenna tuning equipment during periods of no transmission for purposes of using a receiver with the same antenna being used for transmission. This feature is more completely covered in paragraph 7g of Section 2 in this instruction book.

b. TUNING TO A CALIBRATED FREQUENCY.— The tuning chart on the outside of the hinged flap, which is mounted on the door covering the frequency selection knobs on the RFO (figure 4-4), has tabular space for recording all the frequency selection and tuning control settings for 10 preselected frequencies. Use of this chart will permit tuning to any one of the 10 chosen frequencies under "radio silence" conditions without energizing a carrier for tuning purposes.

To establish the values for the first time to be recorded on the chart, the tuning procedures as described in paragraph 6a should be followed.

Note

After the final optimum setting for the TUNE PA \textcircled{D} control has been established (paragraph 6a, step 16), detune slightly by turning the TUNE PA \textcircled{D} control counterclockwise five divisions on the TUNE PA dial. Now slowly rotate the TUNE PA \textcircled{D} control clockwise until the optimum setting is again read on the r-f ammeter on the load adjusting unit. The TUNE PA dial reading now established should be recorded on the chart under the "D" column. (The above procedure is followed to take in account the slight backlash in the chain-drive mechanism of the PA tuning.)

If it is established for any of the 10 frequencies that the correct setting for the control-indicator is "BYPASS", the word "BYPASS" should be entered on the chart under the combined "POS", "AC", and "AD" columns.

Once the proper values for each of the 10 preselected frequencies have been recorded on the chart, the following tuning procedure can be followed:

Step 1. Perform preliminary steps outlined in paragraph 6a, step 1 through step 3.

Step 2. Set EXCITATION (Z) control on the RFA at its maximum clockwise setting.

Step 3. Make all frequency selection and tuning control settings according to the readings recorded on the chart.

Note

When setting the TUNE PA (D) control, start with the TUNE PA dial reading less than the desired reading and turn control (D) clockwise until the recorded dial setting is reached.

If the recorded setting for the control-indicator controls is "BYPASS", place ANTENNA TRANSFER (AE) control in the BYPASS position and the settings of the POSITION meter, (AC) and (AD) will be immaterial. If specific values are recorded on the chart for the settings of "POS", "AC" and "AD", these values should be set and the ANTENNA TRANSFER (AE) control placed in the TUNER IN position.

Step 4. Place STANDBY-OPERATE (PP) switch on the LVPS in OPERATE.

Step 5. Throw TEST KEY (T) on the LLRM to its locking position, which will energize a carrier.

Step 6. With the PA-METER SELECTOR (H) in the I_{c2} position, check the PA screen grid current. If the reading is in excess of 70 ma, adjust the EXCITATION (Z) control to reduce the value to 70 ma. If the reading is below 70 ma, leave (Z) control at its full clockwise rotation if the RF IN reading on the VOLTMETER does not exceed 5 volts. If RF IN reads in excess of 5 volts, reduce the (Z) control regardless of the reading of the PA I_{c2}.

Step 7. Restore the TEST KEY (T) on the LLRM to its normal off position. Tuning is completed.

c. VARIANCES IN TUNING PROCEDURES WHEN AN ANTENNA OTHER THAN A STANDARD NAVY 35-FOOT WHIP IS USED.—Variances in the tuning procedure described in paragraphs 6a and 6b caused by employing an antenna other than a standard Navy 35-foot whip are reflected only in changes in setting up the controls on the control-indicator.

In tuning to an uncalibrated frequency, the following procedure can be followed:

Step 1. Perform preliminary steps outlined in paragraph 6a, step 1 through step 6.

Step 2. Place ANTENNA TRANSFER (AE) control on the control-indicator in the BYPASS position. Set SWR CALIBRATE (AB) control to 2:1.

Step 3. Perform steps to tune the transmitter bay as outlined in paragraph 6a, step 8 through step 13.

Step 4. Set the controls on the control-indicator in accordance with one of the following alternatives. (If none of the following adjustments provide a reading on the SWR BALANCE meter of 2:1 or lower, accept the setting which provides the lowest SWR reading.)

If SWR BALANCE meter reads an SWR of 2:1 or lower, no further regulation of controls on the control-indicator is required.

If SWR is greater than 2:1, place (AE) control in the TUNER IN position. Set (AB) control to 8:1. Set the TRANSFORMER (AC) control to DIRECT and the ANTENNA COUPLER LOADING (AD) control to DIRECT. Depress the UP (AF) button until the POSITION meter reads 100. Then depress the DOWN (AG) button until the indicator on the SWR BALANCE meter shows a dip towards the low area. Jog the UP (AF) and DOWN (AG) buttons, holding the SLOW (AH) button depressed until a maximum left-hand deflection is found. If the reading is 2:1 or lower, no further adjustments on the control-indicator are needed.

(1) If the SWR is higher than 2:1 and if the tuned frequency is higher than 2.0 mc, try position A (series capacitor in) on the (AD) control. Rescan the tuning with the UP (AF) and DOWN (AG) buttons; starting downwards from 100 on the POSITION meter, look for a dip in the SWR BALANCE meter. If no dip is found, set (AD) control to B and, if necessary, to E, rescanning each time.

(2) If the SWR is higher than 2:1 and if the tuned frequency is lower than 0.5 mc, select position C (series inductor) on the (AD) control and position 1 on the (AC). Rescan the tuning with the UP (AF) and DOWN (AG) buttons; starting downwards from 100 on the POSITION meter, look for a dip in the SWR BALANCE meter. If no dip is found, set the (AD) control to D and rescan.

CAUTION

Positions C and D on the ANTENNA COUPLER LOADING (AD) control should not be used above 2.0 mc.

(3) If the SWR is higher than 2:1 and if the tuned frequency is between 0.5 mc and 2.0 mc, select position 1 on the (AC) control with the (AD) control in DIRECT. Rescan the tuning with the UP (AF) and DOWN (AG) buttons; starting downwards from 100 on the POSITION meter, look for a dip on the SWR BALANCE meter.

Step 5. Complete final tuning adjustments as outlined in paragraph 6a, step 15 through step 18, after which tuning will be completed.

7. REMOTE OPERATION.

The turning on or off of power, the energizing of a carrier, and the originating of a signal, the latter in hand-key or phone operation only, can be accomplished from a remote position. The two transmitter groups of an AN/SRT-16 may be operated independently from two different remote locations. To operate remotely, several preliminary steps must be accomplished at the transmitter bay location.

a. PRELIMINARY SETTINGS.—The preliminary settings required depend on whether or not frequency selection and tuning are required.

(1) **FREQUENCY SELECTION AND TUNING REQUIRED.**—The following are the preliminary steps required at the transmitter bay location when frequency selection and tuning are required.

(a) With the LOCAL-REM switch (X) in the LLRM in the LOCAL position, accomplish all frequency selections and tuning functions required as detailed in paragraphs 5 and 6.

(b) Turn power off by depressing the STOP button of the MAIN POWER switch (P) on the LVPS; the EMERGENCY SWITCH (M) remains on.

(c) Put LOCAL-REM switch (X) in the REM position.

(d) Select a service in accordance with paragraph 5.

(e) Place STANDBY-OPERATE switch (P) in the LVPS in the OPERATE position.

(f) Turn the BOOSTER EMERGENCY switch (S) to the ON position if it is desired to transmit at the 500-watt level (AN/SRT-15 and 16 only).

(2) **FREQUENCY SELECTION AND TUNING NOT REQUIRED.**—The following are the preliminary steps required at the transmitter bay location when frequency selection and tuning are not required.

(a) Put LOCAL-REM switch (X) in the REM position.

(b) Turn EMERGENCY SWITCH (M) to the ON position.

(c) Select a service in accordance with paragraph 5.

(d) Place STANDBY-OPERATE switch (P) in the OPERATE position.

(e) Turn the BOOSTER EMERGENCY SWITCH (S) to the ON position if it is desired to transmit at the 500-watt level (AN/SRT-15 and 16 only).

Note

If there is any doubt as to the condition of the transmitter prior to transmission at the 500-watt level, the tuning procedures as described previously should be followed prior to energizing of a carrier.

b. TURNING POWER ON.—Energizing of transmitter group power may now be done from the remote location using a remote radiophone unit (Navy Type 23500 or equivalent). To turn booster power on for 500-watt operation (AN/SRT-15 and 16 only) requires control from the transmitter bay location.

(1) **TURNING ON TRANSMITTER GROUP POWER.**—Depressing the START push button on the remote radiophone unit will energize the POWER indicator light. Simultaneously, in the transmitter group, the same indicator lights and circuits as described in paragraph 3a(2)(a) through paragraph 3a(2)(b) will be energized. If the service chosen was hand key, the indicator lights and circuits in the transmitter group, as described in paragraph 3a(2)(i) through paragraph 3a(2)(k), will also be energized at this time.

(2) **TURNING ON BOOSTER POWER.**—To turn on booster power in the AN/SRT-15 and 16 when in remote operation, the preliminary settings described in paragraph 7a must be made, followed by the energizing of transmitter group power, per paragraph 7b(1). The final step is to depress the PUSH FOR 500 W push button (E) on the RFA of the transmitter group, which energizes the CARRIER-500 W-READY indicator on the RFA. If the service chosen was hand key, indicator lights and circuits, as described in paragraph 3b(2)(b) through paragraph 3b(2)(e), will be energized at this time.

c. ENERGIZING A CARRIER.—In remote control, a "standby-operate" control is available in all services to control the presence of a carrier at the transmitter output.

(1) **HAND-KEY OPERATION.**—As described in paragraph 7b(1), plate power is applied in the transmitter group in hand-key operation when the START button on the remote radiophone unit is depressed. However, a carrier is not radiated until a hand key is inserted in the KEY jack of the remote radiophone unit. As hand-key operation is a c-w transmission, a "key-down" (mark) signal from the hand key will energize the carrier while the "key up" (space) signal cuts the carrier off.

(2) **MACHINE-KEY, FSK, AND FACSIMILE OPERATION.**—In machine-key, FSK, and facsimile transmission, the remote control of the carrier is accomplished by controlling the application of plate power in the transmitter group. Closing the keying line, using a key inserted in the KEY jack, energizes the plate voltage, which places the transmitter in the "operate" condition. In FSK and facsimile transmission, this simultaneously energizes the carrier. In machine-key operation, which is a c-w transmission, a mark signal must be received in addition at the transmitter group to energize the carrier. Opening the keying line removes plate power in the transmitter group, and it returns to the "stand-by" condition.

(3) PHONE OPERATION.—As above, closing the keying line from the remote radiophone unit, in PHONE operation, energizes plate power and the carrier in the transmitter group. In this case, the keying line is closed by depressing the press-to-talk button on the phone. Release of the press-to-talk button opens the keyline and restores the transmitter group to "stand-by" by de-energizing the plate power. When press to talk is depressed, the CARRIER ON indicator light on the remote radiophone unit will be energized.

d. ORIGINATING A SIGNAL.—A hand-key or phone signal may be originated at the remote radiophone unit. In hand-key operation, the carrier is keyed on and off. This is covered in paragraph 7c(1). In phone operation, a carbon phone is inserted in the HANDSET or CHESTSET jack and the voice signal transmitted through it to the transmitter group will be the modulating signal. In machine-key and FSK operation, the originating signal comes from machine-key equipment and is supplied directly to the transmitter group. In facsimile operation, the originating signal also is connected directly from the facsimile equipment to the transmitter group.

e. TURNING POWER OFF.—As long as the transmitter group remains in operation under control of the remote radiophone unit (LOCAL-REM switch \otimes in REM), transmitter group power can be turned off remotely. With the transmitter group energized, depressing the STOP push button on the remote radiophone unit de-energizes transmitter group power in the same manner as depressing the STOP push button of the MAIN POWER switch \textcircled{R} does in local operation (paragraph 3a(3)).

8. MONITORING SIGNALS.

a. RFO OCSILLOSCOPE TEST RECEPTACLES.—Across the bottom of the RFO front panel are located six receptacles that bring out the signals from various subunits of the RFO for checking purposes (figure 4-4). These receptacles are designated 100 KC XTAL, 10 KC, 10 KC STEP, 100 KC STEP, INT. OSC., and F.S. OSC. These outputs can be connected to a standard test oscilloscope (Navy type OS-8/U or equivalent) for observation of the various outputs.

b. ZERO BEAT INDICATOR.—To monitor the outputs of the interpolation oscillator and frequency-shift oscillator subunits of the RFO against the crystal-controlled standard, an electron ray tube designated ZERO BEAT INDICATOR is provided on the RFO front panel (figure 4-4). ZERO ADJ. switch \textcircled{Z} is used to select which of the two signals is to be compared to the standard. The INT. OSC. ZERO ADJ. and F.S.O. ZERO ADJ. controls are adjusted to give a zero beat condition of the shadow angle on the ZERO BEAT INDICATOR. The adjustments are located behind the door on the RFO panel that covers the frequency selection knobs (figure 4-5).

Note

If the beat frequency between the measured output and the standard is large, the opening and closing of the shadow angle on the ZERO BEAT INDICATOR will be so rapid as to appear as a blur. Care should be taken to distinguish this condition from a zero beat indication.

c. SIDETONE.—The LLRM has a front panel control and jack that permit the local monitoring of an audio signal (figure 4-3). With a headset connected to the SIDETONE jack, the SIDETONE control \textcircled{W} should be turned clockwise as far as required for the desired level of earphone reception.

d. CHECKING MODULATION.—For setting and checking 100 percent modulation in phone operation, follow the procedure outlined in paragraph 4e(6). A more exact method of checking for 100 percent modulation to be made by a technician with test equipment is found in paragraph 6a(1) of Section 7 of this instruction book.

9. SUMMARY OF OPERATION.

a. TURNING THE POWER ON.—Turn on the EMERGENCY SWITCH \textcircled{M} in the LVPS. If 500-watt operation is desired, turn on the BOOSTER EMERGENCY switch \textcircled{S} . Depress the START button of the MAIN POWER switch \textcircled{R} on the LVPS.

b. SELECTING A SERVICE.—Turn the SERVICE SELECTOR switch \textcircled{U} on the LLRM to the desired service. For hand-key operation, set controls \textcircled{S} , \textcircled{R} , and TIME CONST. ADJ. control (paragraph 4a). For machine-key operation, set controls \textcircled{S} and \textcircled{R} (paragraph 4b). For FSK operation, set controls \textcircled{K} , \textcircled{R} , \textcircled{S} , and \textcircled{L} (paragraph 4c). For facsimile operation, set control \textcircled{K} (paragraph 4d). For phone operation, set controls \textcircled{Y} , \textcircled{L} , \textcircled{P} , \textcircled{M} , \textcircled{N} , and \textcircled{W} (paragraph 4e).

c. SELECTING A FREQUENCY.—Open the door covering the frequency selection knobs on the RFO. Set frequency selection knobs \textcircled{AA} , \textcircled{BB} , \textcircled{FF} , \textcircled{GG} , \textcircled{HH} , \textcircled{JJ} , \textcircled{CC} , \textcircled{DD} , and \textcircled{EE} according to the desired frequency (paragraph 5). Close the door covering the knobs.

d. TUNING OPERATION.—Place the STANDBY-OPERATE switch \textcircled{P} in STANDBY. Turn transmitter group power on. Set BANDSWITCH \textcircled{C} on the RFA to the band of the frequency selected. Set EXCITATION control \textcircled{Z} on the RFA full clockwise. Preset control-indicator controls (paragraph 6a, step 7). Preset \textcircled{V} and \textcircled{W} controls on the load adjusting unit to position 4. Place STANDBY-OPERATE switch in OPERATE position. Throw TEST KEY \textcircled{T} on the LLRM to the locking position. Adjust EXCITATION control \textcircled{Z} if required (paragraph 6a, step 11). Set TUNE IPA control \textcircled{B} (paragraph 6a, step 12). Make initial setting of TUNE PA control \textcircled{D} (paragraph 6a, step 13). Regulate UP \textcircled{AF} and DOWN \textcircled{AG} controls on the control-indicator (paragraph 6a, step 14). If required, adjust \textcircled{V} and \textcircled{W}

controls on load adjusting unit (paragraph 6a, step 15). "Peak up" TUNE PA ① control (paragraph 6a, step 16). Check setting of ② control (paragraph 6a, step 17). Restore TEST KEY ③ to its normal off position.

e. REMOTE OPERATION.—Turn EMERGENCY SWITCH ④ to ON. Make all preliminary settings at the

transmitter group location (paragraph 7a). Depress START push button on the remote radiophone unit. Energize a carrier (paragraph 7c). Transmit a signal in either hand-key or phone operation. Open keying line to de-energize a carrier (paragraph 7c). Depress STOP push button on the remote radiophone unit to turn transmitter group power off.

NOTES

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NAVSHIPS 92121(A)

INSTRUCTION BOOK

for

RADIO TRANSMITTING SETS

AN/SRT-14, AN/SRT-14A, AN/SRT-15,
AN/SRT-15A, AN/SRT-16 AND AN/SRT-16A

SECTION 5

OPERATOR'S MAINTENANCE

FEDERAL TELEPHONE AND RADIO COMPANY

A division of INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

CLIFTON, NEW JERSEY

DEPARTMENT OF THE NAVY

BUREAU OF SHIPS

★
*Contract: NObsr-52021
NObsr-52622*

Approved by BuShips: 26 October 1955

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SECTION 5 OPERATOR'S MAINTENANCE

1. INTRODUCTION.

a. GENERAL.—Many of the operator's adjustment and replacement procedures in servicing AN/SRT-14, 15 and 16 may be accomplished directly in front of the equipment. The operator of the equipment, as a matter of routine, is to make the various checks and adjustments suggested in this section. A general view of the AN/SRT-15 is shown in figure 5-1.

Note

The AN/SRT-14A, 15A and 16A are non-magnetic versions of the AN/SRT-14, 15 and 16, respectively. Since the nonmagnetic versions vary from the standard types only in the material used for cabinet panels, all information on the operator's maintenance of the AN/SRT-14, 15 and 16, as set forth in this section, applies equally to the AN/SRT-14A, 15A and 16A.

Note

Where, throughout this section, reference is made to either low level radio modulator or high level radio modulator, it should not be

interpreted as meaning the technique of modulation known as grid modulation or low level modulation, but rather as referring to the operating *power* level.

b. SHORT OR COMMON NAMES.—To facilitate reference to the equipment, certain short or common names will be used in this section. They are identified in table 5-1, Short or Common Names. Most of these short names will be used throughout the text.

2. ROUTINE CHECKS.

a. PRELIMINARY CONTROL POSITIONS. — In checking the equipment, a certain order should be maintained to avoid confusion during the sequence of operations. Table 5-2 gives the basic positions of certain significant controls at the start of these routine checks.

b. ROUTINE CHECK CHART. (*See figure 5-1.*)— At the beginning of each watch, check the components as listed in table 5-3. At this time, the accessible parts of the equipment should be wiped clean with a dry cloth to check moisture and to maintain the appearance of the equipment.

TABLE 5-1. SHORT OR COMMON NAMES

| ITEM | COMMON NAME | NOMENCLATURE | SYMBOL NO. |
|------|------------------------------------|--|------------|
| 1 | Base Mount | Mounting MT-1423/SRT | 701-799 |
| 2 | Coupler | Antenna Coupler CU-372/SRT | 3501-3599 |
| 3 | HLRM (High Level Radio Modulator) | Radio Modulator MD-230/SRT | 1601-1699 |
| 4 | HLRM Cabinet | Electrical Equipment Cabinet CY-1572/SRT | 1401-1499 |
| 5 | HVPS (High Voltage Power Supply) | Power Supply PP-1096/SRT | 1501-1599 |
| 6 | HVPS Cabinet | Electrical Equipment Cabinet CY-1573/SRT | 1401-1499 |
| 7 | LAU (Load Adjusting Unit) | Transmitter Coupler CU-402/SRT | 3201-3250 |
| 8 | LLRM (Low Level Radio Modulator) | Radio Modulator MD-229/SRT | 1001-1299 |
| 9 | LVPS (Low Voltage Power Supply) | Power Supply PP-1094/SRT | 3001-3099 |
| 10 | MVPS (Medium Voltage Power Supply) | Power Supply PP-1095/SRT | 501-599 |
| 11 | RFA (Radio Frequency Amplifier) | Radio Frequency Amplifier AM-1008/SRT | 1301-1399 |
| 12 | RFO (Radio Frequency Oscillator)* | Radio Frequency Oscillator O-275/SRT | 2001-2099 |
| 13 | R-F Tuner | Radio Frequency Tuner TN-229/SRT | 301-399 |
| 14 | 100-Watt Frame | Electrical Equipment Cabinet CY-1571/SRT | 601-699 |

* The RFO contains a series of subunits that will be referred to by number. For example, the RFO frame is designated as Z-2901 and referred to as unit 14.

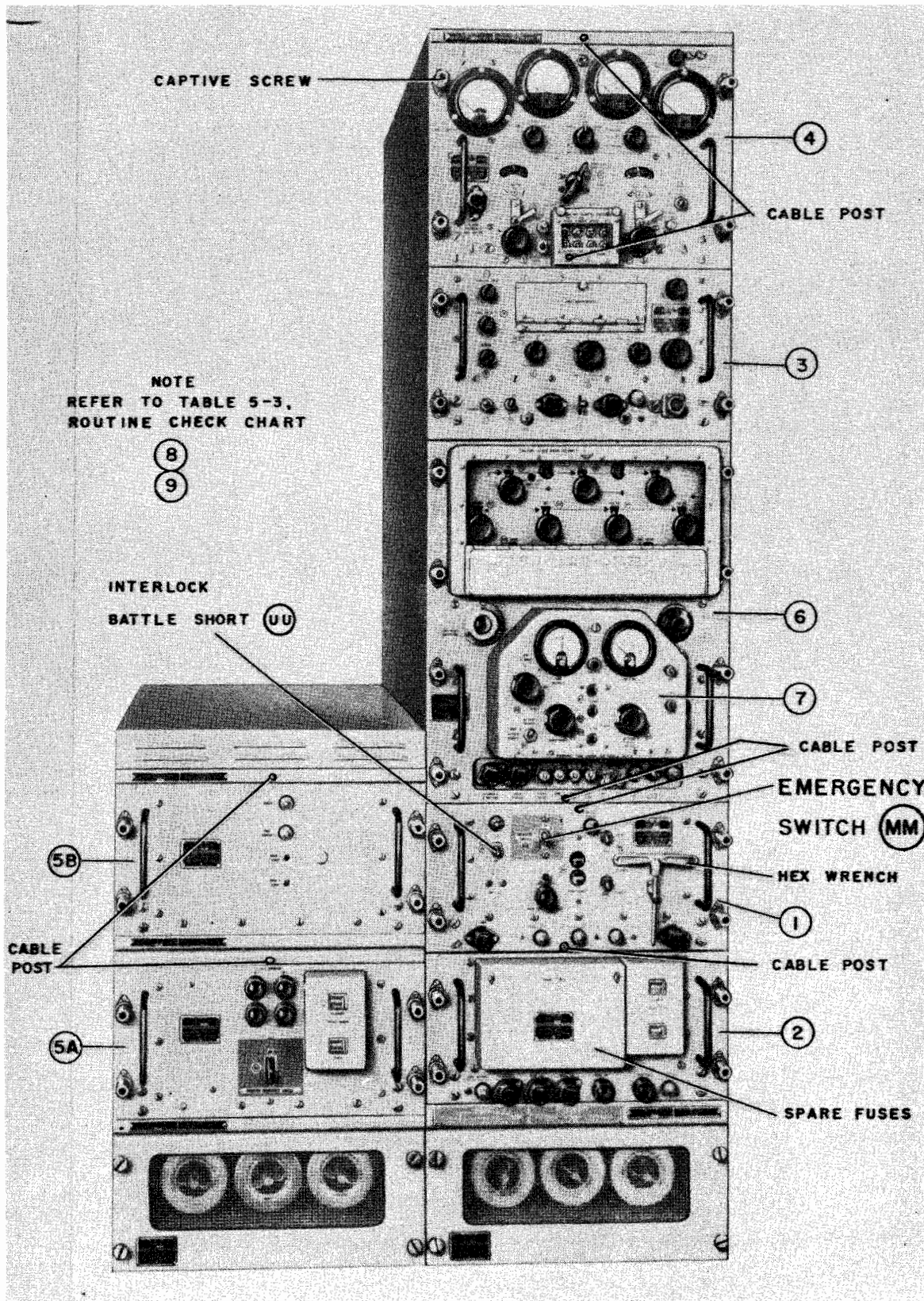


Figure 5-1. AN/SRT-15, Routine Checks

TABLE 5-2. PRELIMINARY CONTROL POSITIONS

| ITEM | CONTROL | POSITION | COMPONENT |
|------|----------------------------|-------------------------|---|
| 1 | PA switch ① | I _{e1} (50 MA) | Radio Frequency Amplifier AM-1008/SRT (RFA) |
| 2 | IPA switch ② | I _{e1} (5 MA) | |
| 3 | VOLTMETER switch ③ | RF IN (5 V) | |
| 4 | INT-OSC-EXT ④ | INT | |
| 5 | EXCITATION ⑤ | 180 degrees CW | |
| 6 | LOCAL-REM. ⑥ | LOCAL | Radio Modulator MD-229/SRT (LLRM) |
| 7 | NEUT-POLAR ⑦ | NEUT | |
| 8 | SPACE-OPER.-MARK ⑧ | OPER. | |
| 9 | SERVICE SELECTOR ⑨ | HAND | |
| 10 | TEST KEY ⑩ | Off | |
| 11 | ZERO ADJ. switch ⑪ | Center | Radio Frequency Oscillator O-275/SRT (RFO) |
| 12 | Frequency Knobs | Set for 2 mc. | |
| 13 | ANTENNA TRANSFER ⑬ | BYPASS | Control-Indicator C-1352/SRT |
| 14 | SWR CALIBRATE ⑭ | OFF | |
| 15 | TRANSFORMER ⑮ | DIRECT | |
| 16 | ANTENNA COUPLER LOADING ⑯ | DIRECT | Power Supply PP-1094/SRT (LVPS) |
| 17 | EMERGENCY SWITCH ⑰ | OFF | |
| 18 | INTERLOCK BATTLE SHORT ⑱ | OFF | |
| 19 | CABINET HEATER ⑲ | OFF | |
| 20 | OPERATE-STANDBY ⑳ | STANDBY | Power Supply PP-1096/SRT (HVPS) |
| 21 | BOOSTER EMERGENCY SWITCH ㉑ | OFF | |

Note

If equipment is already in operation at the time of change-over, check the various indicators noted in table 5-3, item 9 for the 100-watt level and item 10 for the 500-watt level.

The checks in table 5-3 should be made in the numerical sequence established in this chart to avoid confusion concerning the relative positions of the controls. The routine checks are started with the controls in the positions listed in table 5-2.

3. EMERGENCY MAINTENANCE.

a. GENERAL.—The operator should make himself familiar with the equipment in order to correct minor trouble that may develop during periods of emergency. When technical aid is not immediately available, the operator should be able to recognize some of the symptoms that indicate trouble in any of the components.

(1) CHASSIS REMOVAL. — To remove a unit from its drawer, the socket-head captive screws on the front panel (see figure 5-1) must be loosened. These screws are protected by retaining cups. A hex wrench with a T-handle, attached to the front panel of the LVPS (see figure 5-1), is supplied for this purpose.

With these captive screws loosened, the unit may be pulled out for its entire length along the chassis slide runners in the cabinet. The latches, located directly on the slides towards the rear, must be pressed down before the chassis can be lifted out. The latches cannot be pressed down until the two screws under the latches are removed. Two men will be needed to lift any chassis out of its compartment.

Note

Before actually lifting the chassis out of its drawer, its interconnecting cable plug must be removed and fastened to the cable post (see figure 5-1) on the chassis just above, to prevent its springing back into the drawer. If the chassis above the withdrawn unit has been removed, too, this will, of course, be impossible. In the latter case, the cable is to be allowed to retract gently into the vacated drawer recess.

When a drawer is pulled out, two stop buttons are placed in operation, one in each chassis slide. To push the drawer back in, these two spring-loaded stop buttons must be pressed in completely, to clear the inner slide. This will allow the chassis to continue the rest of the way back into its compartment.

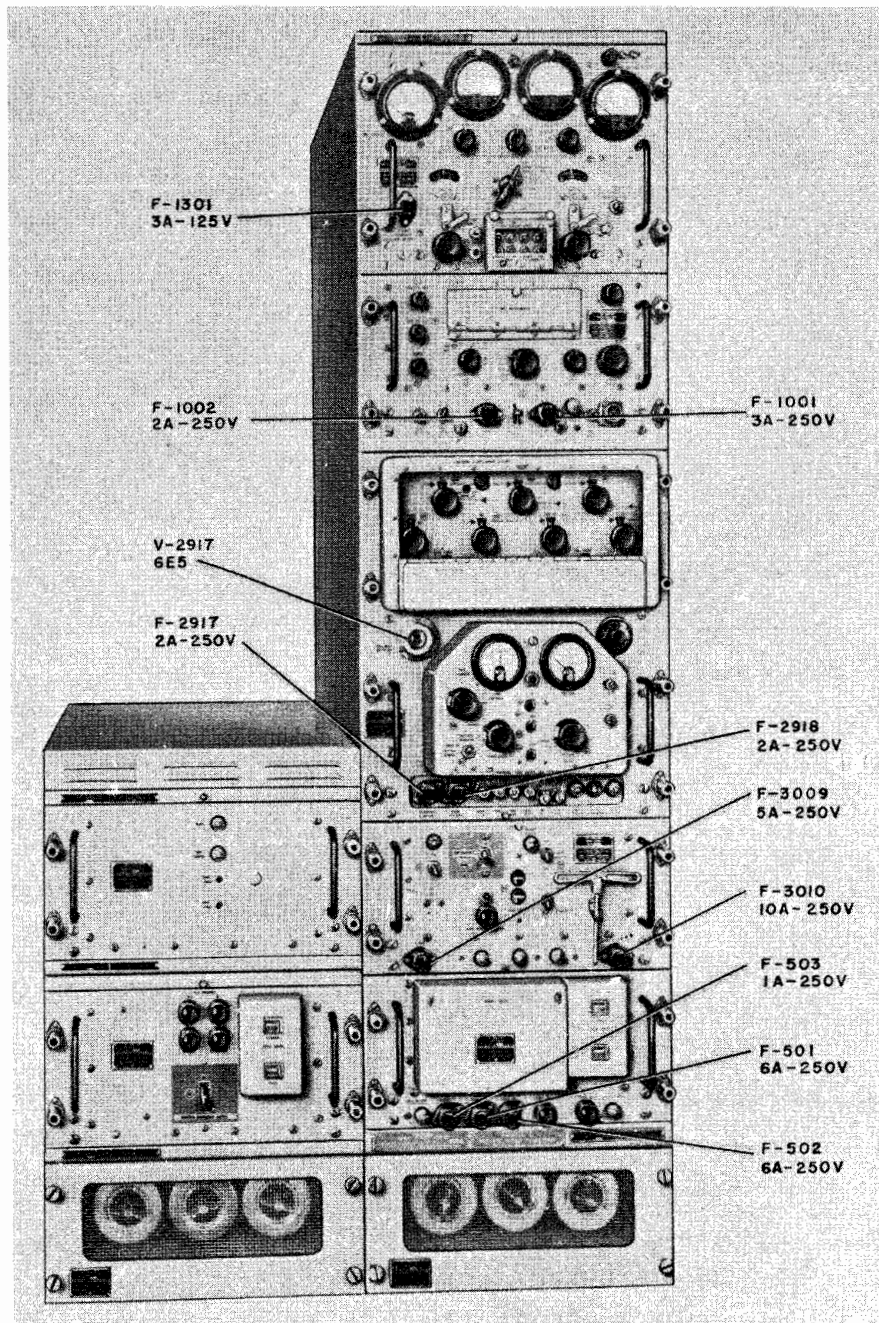



Figure 5-2. AN/SRT-15, Front Panel Tube and Fuse Locations

The interlock continuity is interrupted when the drawer is pulled out. To bypass the interlock, a "cheater" switch has been installed on the left side of each chassis, towards the rear. This switch may be closed to energize the withdrawn chassis. The hard rubber push rod is pushed in to complete the circuit. Another means of circumventing the interlock is provided on the Power Supply PP-1094/SRT (LVPS) front panel in the form of a switch called INTERLOCK BATTLE SHORT . (See figure 5-1.) This bypasses all the interlocks in every chassis.

Note

The INTERLOCK BATTLE SHORT switch is used only under emergency conditions.

(2) CHASSIS REPLACEMENT. — The chassis slides, which are located along the side of each unit, are made in two parts, an inner part and an outer part. Check to be sure that the inner slide is fully engaged in the outer slide before replacing the chassis in its drawer. This will avoid damage to the inner slide. The spring-loaded stop buttons in each of the slides must be depressed to engage the inner slide.

If binding is encountered when replacing a unit, the front of the chassis should be raised slightly and then pushed in.

The EMERGENCY SWITCH (M) on the LVPS must always be turned to OFF before any of the fuses are removed.

Note

The safety screws under the slide latches must be replaced whenever a chassis is returned to its drawer. The front panel hex screws must be securely fastened to prevent the drawer from sliding out unexpectedly.

Most of the fuses are accessible from in front of the equipment (see figure 5-2). Some fuses are available only when the chassis is withdrawn from its compartment (see figure 5-3). This withdrawal procedure is described in this section, paragraph 3a(1). Two of the LVPS fuses are located on the front panel, as shown in figure 5-2. The remainder of the LVPS fuses are located on the left side of the chassis and are available only when the chassis is partially withdrawn (see figure 5-3).

b. FUSES.

(1) FUSE REPLACEMENT.

CAUTION

Never replace a fuse with one of higher rating, unless continued operation of the equipment is more important than possible damage. Never replace a fuse while the power is on.

The fuses for Power Supply PP-1096/SRT (HVPS) are located on terminal boards that are mounted on the chassis towards the rear (see figure 5-4). To remove these fuses, the drawer should be removed from its compartment as described in paragraph 3a(1).

TABLE 5-3. ROUTINE CHECK CHART

| WHAT TO CHECK | HOW TO CHECK | PRECAUTIONS |
|---|---|---|
| 1. Low Voltage Power Supply PP-1094/SRT (LVPS) | (See 1, figure 5-1.) Note Check table 5-2. <i>Step 1.</i> Place EMERGENCY SWITCH (M) in ON position. | Note The HEATER ON lamps on the RFO front panel will be illuminated at all times. They operate intermittently. |
| | <i>Step 2.</i> Check the CABINET HEATER switch (N) and the INTERLOCK BATTLE SHORT (U). Note Keep these two switches turned off, unless they are actually needed. | The CABINET HEATER lamp and the INTERLOCK SHORTED WHEN ON lamp will be illuminated. If they do not light, check table 5-4, Symptoms of Fuse Failure. |
| | <i>Step 3.</i> Press START button of MAIN POWER switch (R). | The MAIN POWER INDICATOR will be illuminated and the blower in the RFA will operate. The 250 V. P.S. lamp on the LLRM front panel will be illuminated. After the time delay, the blowers in the base mount will operate and the following lamps will be illuminated: (1) TIME DELAYS (LVPS) (2) -220 V (3) +250 V (4) Overload lamps (RFA) (5) 100 W-READY lamp Note The overload lamps will be extinguished only when trouble is indicated. Press the SCREEN OVERLOAD RESET button (K) on RFA. |
| 2. Medium Voltage Power Supply PP-1095/SRT (MVPS) | (See 2, figure 5-1.) <i>Step 1.</i> Place OPERATE-STANDBY switch (P) (LVPS) in OPERATE. | The following lamps will be illuminated: (1) 500 V PRI. (MVPS) (2) 500 V OUTPUT (3) 1300 V PRI. (4) 1300 V OUTPUT (5) 100 W-ON (RFA) (6) +300 V (LVPS) |

TABLE 5-3. ROUTINE CHECK CHART (Cont'd)

| WHAT TO CHECK | HOW TO CHECK | PRECAUTIONS |
|--|--|---|
| 3. Radio Modulator MD-229/SRT (LLRM) | (See 3, figure 5-1.) <i>Step 1.</i> Place SERVICE SELECTOR switch ① in PHONE position. | The +300 V lamp on the LVPS will be extinguished, together with the following: (1) 500 V PRI. (MVPS) (2) 500 V OUTPUT (3) 1300 V PRI. (4) 1300 V OUTPUT |
| | <i>Step 2.</i> Connect phone to HANDSET jack and close the press-to-talk switch. | The lamps in step 1, above, will be illuminated when the press-to-talk switch is closed. The following meters will indicate: (1) ANT CURRENT (RFA) (2) PA CURRENT (3) IPA CURRENT (4) VOLTMETER |
| | <i>Step 3.</i> Check sidetone by varying the SIDETONE control while modulating the carrier. | The SIDETONE control is adjusted to the individual need. |
| | <i>Step 4.</i> Check modulation by watching the ANT CURRENT meter. | The ANT CURRENT meter will show variations during modulation. |
| | <i>Step 5.</i> Release the press-to-talk key on the phone and press the TEST KEY ⑦. | The result will be the same as in step 2. |
| | <i>Step 6.</i> Place SERVICE SELECTOR switch ①, successively, in FAX and FSK. Press the TEST KEY ⑦ in each position. | The result will be the same as in step 2. |
| | <i>Step 7.</i> Place SERVICE SELECTOR switch ① in MACH position. | The lamps which were extinguished in step 1 will remain illuminated, even without pressing the TEST KEY ⑦. |
| | <i>Step 8.</i> Press TEST KEY ⑦ and place SPACE-OPER.-MARK switch ⑤ in MARK. | The meters on the RFA will indicate normal operation. Restore TEST KEY ⑦ to center position. |
| 4. Radio Frequency Amplifier AM-1008/SRT (RFA) | (See 4, figure 5-1.) <i>Step 1.</i> Listen for blower operation in rear of RFA. | The RFA blower is on at all times during operation of equipment. |
| | <i>Step 2.</i> Place VOLTMETER control ④ in BIAS (500 V). | The VOLTMETER will show a reading without energizing the TEST KEY ⑦ on the LLRM. |
| | <i>Step 3.</i> Place VOLTMETER control ④ in its various positions. | The VOLTMETER will show a different reading in each position. If no reading is seen, try turning the EXCITATION control ② clockwise. |
| | <i>Step 4.</i> With TEST KEY ⑦ energized, place the METER SELECTOR controls in their various positions. | The meters that correspond to the controls will vary with each setting. |
| | <i>Step 5.</i> With TEST KEY ⑦ energized, check to be sure transmitter is on-frequency. | If off-frequency, check correct operation of units 1, 6, 8, and 12 of the RFO. |
| 5. Booster a. Power Supply PP-1096/SRT (HVPS) | (See 5, figure 5-1.) <i>Step 1.</i> Place the BOOSTER EMERGENCY SWITCH ⑤ in its ON position. | After time delay, the TIME DELAY lamp on the HVPS will be illuminated. |

TABLE 5-3. ROUTINE CHECK CHART (Cont'd)

| WHAT TO CHECK | HOW TO CHECK | PRECAUTIONS |
|--|--|---|
| b. Radio Modulator MD-230/SRT (HLRM) | Step 2. Press the PUSH FOR 500 W switch Ⓔ on the RFA. | The following lamps will be illuminated: (1) $\phi 1$ (HVPS) (2) $\phi 2$ (3) H.V. $\phi 3$ (4) 3000 VOLTS (HLRM) (5) 500 W-READY (RFA) (6) 500 W-ON At the same time, the following lamps will be extinguished: (1) 1300 V PRI. (MVPS) (2) 1300 V OUTPUT (3) 100 W-READY (RFA) (4) 100 W-ON |
| | Step 3. Press the DISABLE 500 W push button switch Ⓕ on the RFA. | The results obtained in step 2, above, will be reversed. |
| 6. Radio Frequency Oscillator O-275/SRT (RFO) | (See 6, figure 5-1.) HEATER ON lamps should be illuminated intermittently even when equipment is not energized. | Check table 5-4, Symptoms of Fuse Failure, if these lamps do not light. |
| 7. Control-Indicator C-1352/SRT | (See 7, figure 5-1.) Place ANTENNA TRANSFER switch Ⓖ in TUNER IN position. | The TUNER IN lamp will be illuminated. Now restore switch to BY-PASS. |
| 8. Radio Frequency Tuner TN-229/SRT and Antenna Coupler CU-372/SRT Pressure Gauges | If the r-f tuner and antenna coupler are readily accessible, check readings on pressure gauges. | Each gauge should read 20 psi. Refer to paragraph 3e for pressurizing information. |
| 9. 100-watt Operation | With the equipment operating at the 100-watt level, check the following key indicators: a. 250 V. P.S. (LLRM) b. MAIN POWER INDICATOR (LVPS) c. 500 V OUTPUT (MVPS) d. 1300 V OUTPUT | If any of these lamps is not illuminated at the 100-watt level, check table 5-4, Symptoms of Fuse Failure—100-watt Operation. |
| 10. 500-watt Operation | With the equipment operating at the 500-watt level, check the following key indicators: a. TIME DELAY (HVPS) b. $\phi 1$ c. $\phi 2$ d. H.V. $\phi 3$ e. 3000 V (HLRM) | Note BAND SWITCH Ⓒ must be in 2-5 MC position. If any of these lamps is not illuminated at the 500-watt level, check table 5-5, Symptoms of Fuse Failure—500 Watt Operation. |

Notice to Operators

OPERATORS MUST NOT PERFORM THIS WORK UNLESS SPECIFICALLY AUTHORIZED.

Example: In the body of the table, it will be noted that F-1301 and F-2917 have the same general symptoms. The correct fuse is located by checking the "Comments" column.

(2) SYMPTOMS OF FUSE FAILURE, 100-WATT OPERATION.—Table 5-4 has been compiled to enable the operator to check for blown fuses when the equipment is operating at the 100-watt level. The operator will check fuses on the same horizontal line as the indicators designated as "OFF" in the body of the table. In some cases, the main symptoms are the same for several fuses. To avoid such conflict, the "Comments" column is consulted in order to locate the faulty fuse.

Note

Refer to table 5-1 for nomenclature. The lamps utilized in table 5-4 are lamps which have a definite significance in regard to fuse failure. Other lamps that may be illuminated at this time are not pertinent to this procedure.

TABLE 5-4. SYMPTOMS OF FUSE FAILURE, 100-WATT OPERATION

| LLRM | RFO | LVPS | | MVPS | | BLOWN FUSE | VALUE—AMPS | COMMENTS |
|------|-----|----------------------|----------------|--------------|---------------|---------------|------------|--|
| | | MAIN POWER INDICATOR | CABINET HEATER | 500 V OUTPUT | 1300 V OUTPUT | | | |
| *ON | ON | ON | ON | ON | ON | — | — | See figures 5-2 and 5-3 for fuse locations. |
| | | | | OFF | | F-501 (MVPS) | 6 | Press TEST KEY (T). Only VOLTME-TER on RFA will indicate. |
| | | | | | OFF | F-502 | 6 | Press TEST KEY (T). ANT CURRENT meter will not indicate. |
| | | | | OFF | OFF | F-503 | 1 | Press TEST KEY (T). All RFA panel meters will indicate. |
| OFF | | | | | | F-1001 (LLRM) | 3 | |
| | | | | | | F-1002 | 2 | |
| | | | | | | F-1301 (RFA) | 3 | Press TEST KEY (T). Only VOLTME-TER of RFA front panel meters will indicate. |
| | | | | | | F-2917 (RFO) | 2 | TUNING POSITION meter on control-indicator will operate at slow speed only. |
| | OFF | | | | | F-2918 | 2 | The HEATER ON lamps operate intermittently. Be sure to check operation before condemning fuse. |
| | | | OFF | | | F-3001 (LVPS) | 10 | Place CABINET HEATER switch (M) in ON position. Lamp will fail to light. Check both fuses. |
| | | | | | | F-3002 | 10 | |
| | | | | | | F-3003 | 5 | These fuses have been installed in an internal circuit (not active). |
| | | | | | | F-3004 | 5 | |
| OFF | | | | OFF | OFF | F-3005 | 6 | Check both fuses. |
| | | | | | | F-3006 | 6 | |
| OFF | | OFF | | OFF | OFF | F-3007 | 1 | Check both fuses. |
| | | | | | | F-3008 | 1 | |
| | | | | OFF | OFF | F-3009 | 5 | Press TEST KEY (T). None of the RFA front panel meters will indicate. Check both fuses. |
| | | | | | | F-3010 | 10 | |

* Top line shows normal operating conditions. Check any deviation from normal. In some cases, the lamp may be defective, missing, or loose.

TABLE 5-5. SYMPTOMS OF FUSE FAILURE, 500-WATT OPERATION

| HLRM | HVPS | | | | 440-VOLT INPUT | | 220-VOLT INPUT | | COMMENTS |
|--------|------------|-----|-----|---------|----------------|------------|----------------|------------|---|
| | TIME DELAY | φ1 | φ2 | H.V. φ3 | BLOWN FUSE | VALUE—AMPS | BLOWN FUSE | VALUE—AMPS | |
| 3000 V | | | | | | | | | |
| *ON | ON | ON | ON | ON | — | — | | | See figure 5-4 for HVPS fuse locations. |
| | | | | OFF | F-1501 | 3½ | F-1506 | 6¼ | F-1501 through F-1505, inclusive, are used with the 440-volt input. F-1506 through F-1510, inclusive, are used with the 220-volt input. |
| | | | OFF | | F-1502 | 3½ | F-1507 | 6¼ | |
| | | OFF | | | F-1503 | 3½ | F-1508 | 6¼ | |
| OFF | OFF | OFF | OFF | OFF | F-1504 | 3½ | F-1509 | 6¼ | F-1504, F-1505, F-1509, and F-1510 produce the same general symptoms. |
| OFF | OFF | OFF | OFF | OFF | F-1505 | 3½ | F-1510 | 6¼ | |

* Top row shows normal operation. Any deviation from normal is to be investigated. In some cases, the lamp itself may be defective, missing or loose in its socket.

(3) SYMPTOMS OF FUSE FAILURE, 500-WATT OPERATION.—Table 5-5 is used to assist the operator in locating blown fuses when the equipment is in 500-watt operation. Check the indicators designated as "OFF" in the body of the table; this will identify the faulty fuse on the same horizontal line.

Example: If the indicator lamp designated as "ϕ1" on the HVPS is the only lamp which is "OFF" (extinguished), the faulty fuse will be F-1503 or F-1508. These fuses perform the same function, depending on the voltage input.

Note

Refer to table 5-1 for nomenclature. The lamps utilized in table 5-5 have been chosen for

their special significance in locating fuse failures. Other lamps which may be illuminated at this time are not pertinent to this procedure.

(4) FUSE LOCATIONS.—Table 5-6 will enable the operator to locate the positions of the various fuses in the equipment.

(5) SPARE FUSES.—Table 5-7 is a list of the spare fuses supplied with the equipment. A box of spare fuses is located on the front panel of the Medium Voltage Power Supply PP-1095/SRT (MVPS). (See figure 5-1.)

TABLE 5-6. FUSE LOCATIONS

| LOCATION | SYMBOL | PROTECTS | AMPS | VOLTS | TYPE |
|---|--------|------------------------------------|------|-------|-----------|
| Power Supply PP-1095/SRT (MVPS) (See figure 5-2.) | F-501 | T-500; 500-volt supply | 6 | 250 | F09G6R00B |
| | F-502 | T-503; 1,050-1,300-volt supply | 6 | 250 | F09G6R00B |
| | F-503 | T-502 | 1 | 250 | R09G1R00B |
| Radio Modulator MD-229/SRT (LLRM) (See figure 5-2.) | F-1001 | T-1001; 250-volt regulated supply | 3 | 250 | F09G3R00B |
| | F-1002 | T-1002; filament supply | 2 | 250 | R09G2R00B |
| Radio Frequency Amplifier AM-1008/ SRT (RFA) (See figure 5-2.) | F-1301 | B-1306; T-1302 | 3 | 125 | R09G3R00B |
| Power Supply PP-1096/SRT (HVPS) (See figure 5-4.) | F-1501 | Phase 1, 440 volts | 3½ | 600 | FRS 3½ |
| | F-1502 | Phase 2, 440 volts | 3½ | 600 | FRS 3½ |
| | F-1503 | Phase 3, 440 volts | 3½ | 600 | FRS 3½ |
| | F-1504 | T-1501, 440 volts | 3½ | 600 | FRS 3½ |
| | F-1505 | T-1501, 440 volts | 3½ | 600 | FRS 3½ |
| | F-1506 | Phase 1, 220 volts | 6¼ | 600 | FRS 6¼ |
| | F-1507 | Phase 2, 220 volts | 6¼ | 600 | FRS 6¼ |
| | F-1508 | Phase 3, 220 volts | 6¼ | 600 | FRS 6¼ |
| | F-1509 | T-1501, 220 volts | 6¼ | 600 | FRS 6¼ |
| | F-1510 | T-1501, 220 volts | 6¼ | 600 | FRS 6¼ |
| Radio Frequency Oscillator O-275/ SRT (RFO) (See figure 5-2.) | F-2917 | Filaments and tuner motors | 2 | 250 | F09G2R00B |
| | F-2918 | Oven heaters | 2 | 250 | F09G2R00B |
| Power Supply PP-1094/SRT (LVPS) (See figure 5-3.) (See figure 5-2.) | F-3001 | Cabinet heater | 10 | 250 | F09D10R0B |
| | F-3002 | Cabinet heater | 10 | 250 | F09D10R0B |
| | F-3003 | Fused a-c line | 5 | 250 | F09G5R00B |
| | F-3004 | Fused a-c line | 5 | 250 | F09G5R00B |
| | F-3005 | Main a-c line | 15 | 250 | F09G15R0A |
| | F-3006 | Main a-c line | 15 | 250 | F09G15R0A |
| | F-3007 | Input a-c line | 1 | 250 | F09G1R00B |
| | F-3008 | Input a-c line | 1 | 250 | F09G1R00B |
| | F-3009 | T-3001 | 5 | 250 | F09G5R00B |
| | F-3010 | CR-3001; CR-3003; -24-volt control | 10 | 250 | F09D10R0B |

TABLE 5-7. SPARE FUSES

| SPARES FOR | NO. OF SPARES | AMPS | VOLTS | TYPE |
|------------|---------------|------|-------|-----------|
| F-501 | 3 | 6 | 250 | F09G6R00B |
| F-503 | 2 | 1 | 250 | F09G1R00B |
| F-1301 | 3 | 3 | 250 | F09G3R00B |
| F-2917 | 4 | 2 | 250 | F09G2R00B |
| F-3001 | 4 | 10 | 125 | F09D10R0B |
| F-3003 | 4 | 5 | 250 | F09G5R00B |
| F-3005 | 3 | 15 | 250 | F09G15R0A |

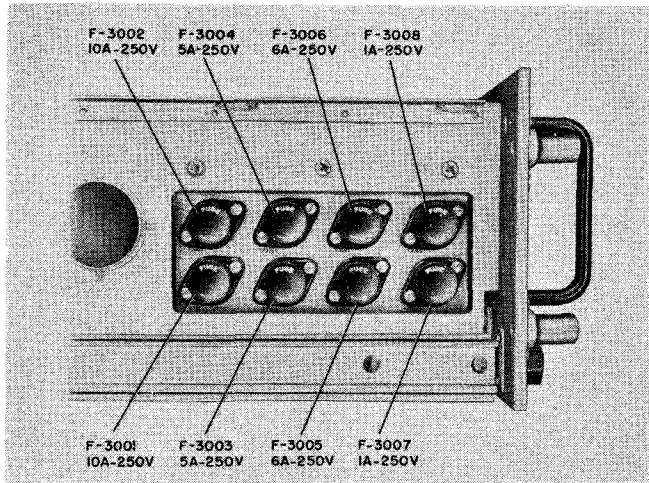


Figure 5-3. Power Supply PP-1094/SRT (LVPS), Left Side Panel, Fuse Locations

(6) UNITS WITHOUT FUSES.—The following units contain no fuses.

- (a) Radio Frequency Tuner TN-229/SRT (R-F Tuner)
- (b) Control-Indicator C-1352/SRT
- (c) Antenna Coupler CU-372/SRT (Coupler)
- (d) Transmitter Coupler CU-402/SRT (LAU)

- (e) Mounting MT-1423/SRT (Base Mount)
 - (f) Radio Modulator MD-230/SRT (HLRM)
- c. TUBES.

(1) TUBE LOCATIONS.—Table 5-8 is a list of the tubes, with illustration references that will enable the operator to locate the tubes in the equipment. The tubes are listed in order of their numerical symbols, from the lowest number, V-501 (MVPS), through the highest number, V-3003 (LVPS).

(2) PA TUBE V-1304.

(a) REMOVING THE PA TUBE. (See figure 5-14).—The following procedure is followed in removing the power amplifier tube, V-1304 (4-400A):

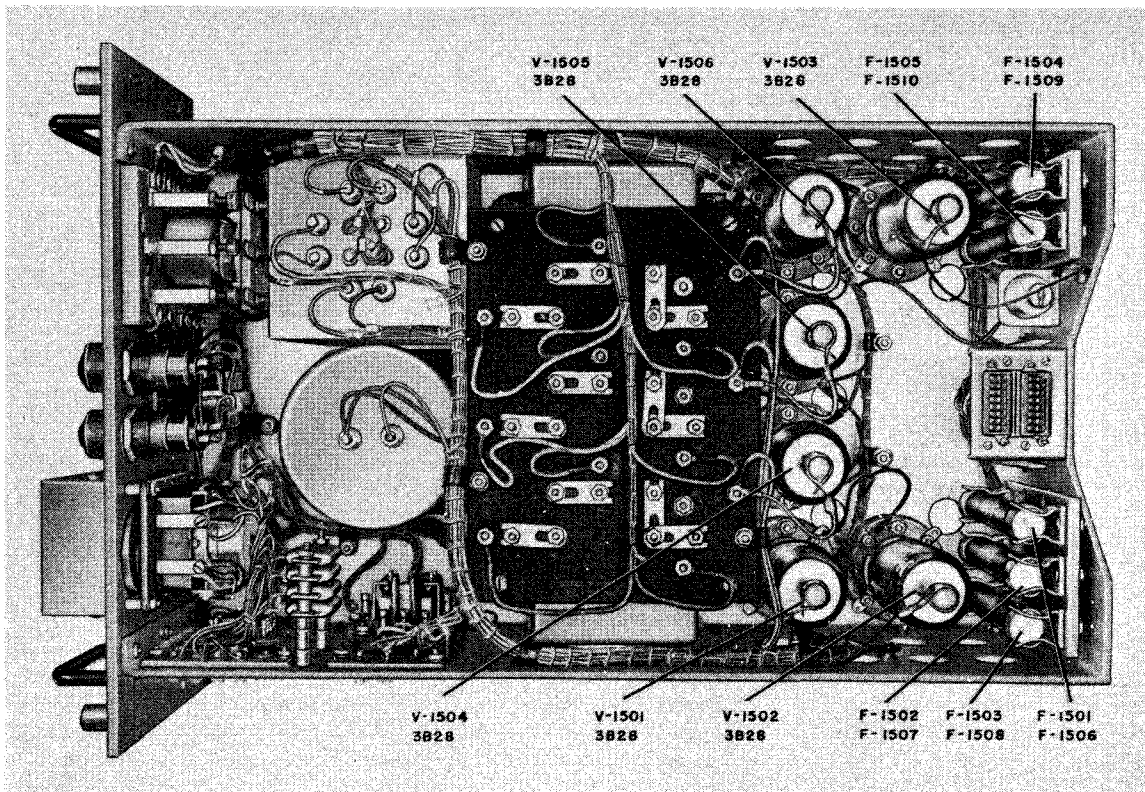


Figure 5-4. Power Supply PP-1096/SRT (HVPS), Top View, Tube and Fuse Locations

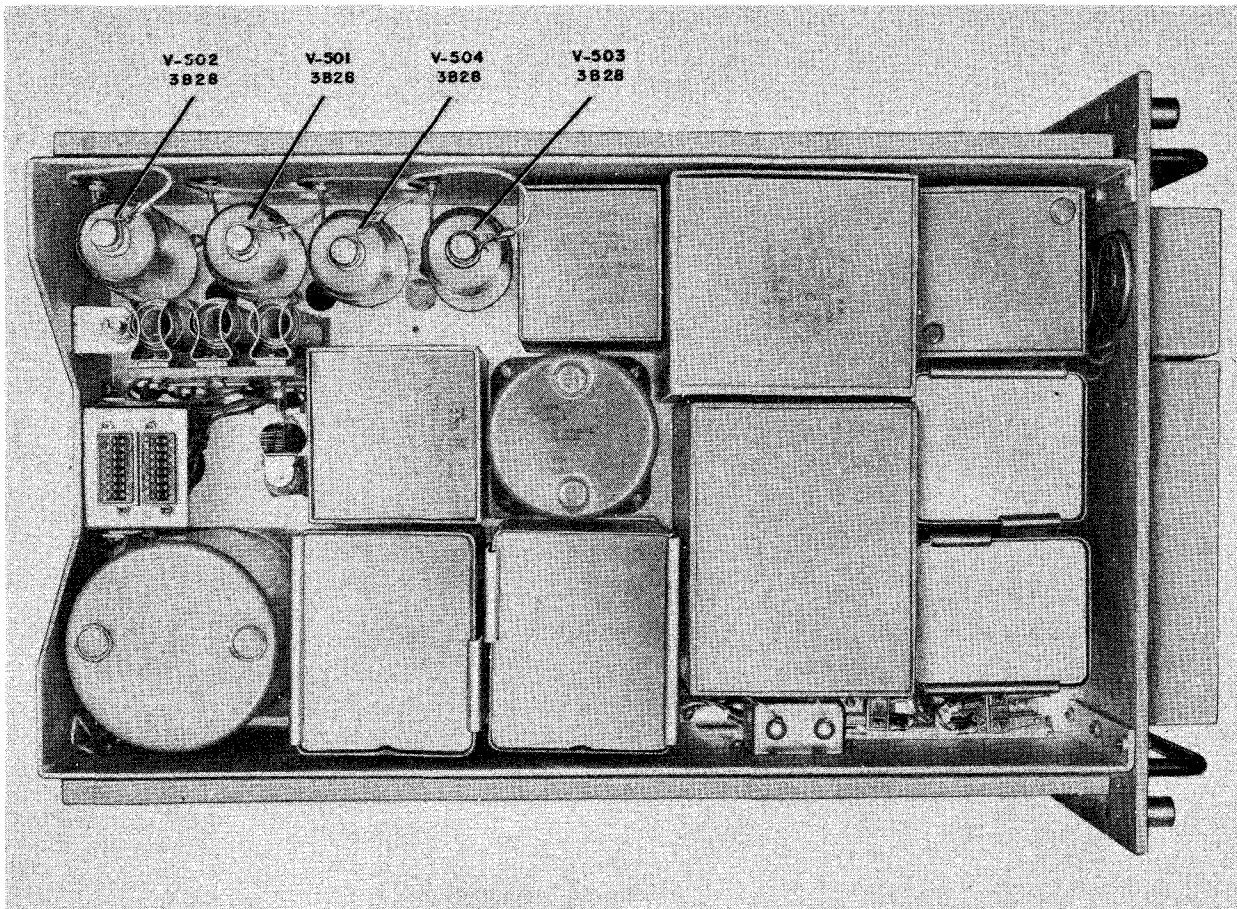


Figure 5-5. Power Supply PP-1095/SRT (MVPS), Top View, Tube Locations

TABLE 5-8. TUBE LOCATIONS

| | SYMBOL | TYPE | SYMBOL | TYPE |
|----|---|--------|--------|------|
| 1. | Power Supply PP-1095/SRT (MVPS). (See figure 5-5.) | | | |
| | V-501 | 3B28 | V-503 | 3B28 |
| | V-502 | 3B28 | V-504 | 3B28 |
| 2. | Radio Modulator MD-229/SRT (LLRM). See figure 5-6.) | | | |
| | V-1001 | 5725 | V-1013 | 5726 |
| | V-1002 | 5751 | V-1014 | 5726 |
| | V-1003 | 5751 | V-1015 | 6201 |
| | V-1004 | 5814 | V-1016 | 5726 |
| | V-1005 | 5814 | V-1017 | 6201 |
| | V-1006 | 5933 | V-1018 | 5726 |
| | V-1007 | 5933 | V-1019 | 6201 |
| | V-1008 | 5814 | V-1020 | 6201 |
| | V-1009 | 5R4WGB | V-1021 | 0B2 |
| | V-1010 | 6AS7G | V-1022 | 0B2 |
| | V-1011 | 5751 | V-1023 | 6201 |
| | V-1012 | 5651 | | |

TABLE 5-8. TUBE LOCATIONS (Cont'd)

| | SYMBOL | TYPE | SYMBOL | TYPE |
|----|---|------|--------|---------|
| 3. | Radio Frequency Amplifier AM-1008/SRT (RFA). (See figure 5-7.) | | | |
| | V-1301 | 6AG7 | V-1303 | 0A2 |
| | V-1302 | 5933 | V-1304 | *4-400A |
| 4. | Power Supply PP-1096/SRT (HVPS). (See figure 5-4.) | | | |
| | V-1501 | 3B28 | V-1504 | 3B28 |
| | V-1502 | 3B28 | V-1505 | 3B28 |
| | V-1503 | 3B28 | V-1506 | 3B28 |
| 5. | Radio Modulator MD-230/SRT (HLRM). (See figure 5-8.) | | | |
| | V-1601 | 4D21 | V-1604 | 0B2 |
| | V-1602 | 4D21 | V-1605 | 0B2 |
| | V-1603 | 0A2 | | |
| 6. | Radio Frequency Oscillator Z-2001 (RFO-Unit 1). (See figure 5-9.) | | | |
| | V-2001 | 5654 | V-2003 | 5814 |
| | V-2002 | 5814 | | |

* In emergencies, tube type 5D21 may be used, if available, in place of the 4-400A, but only at the 100-watt level.

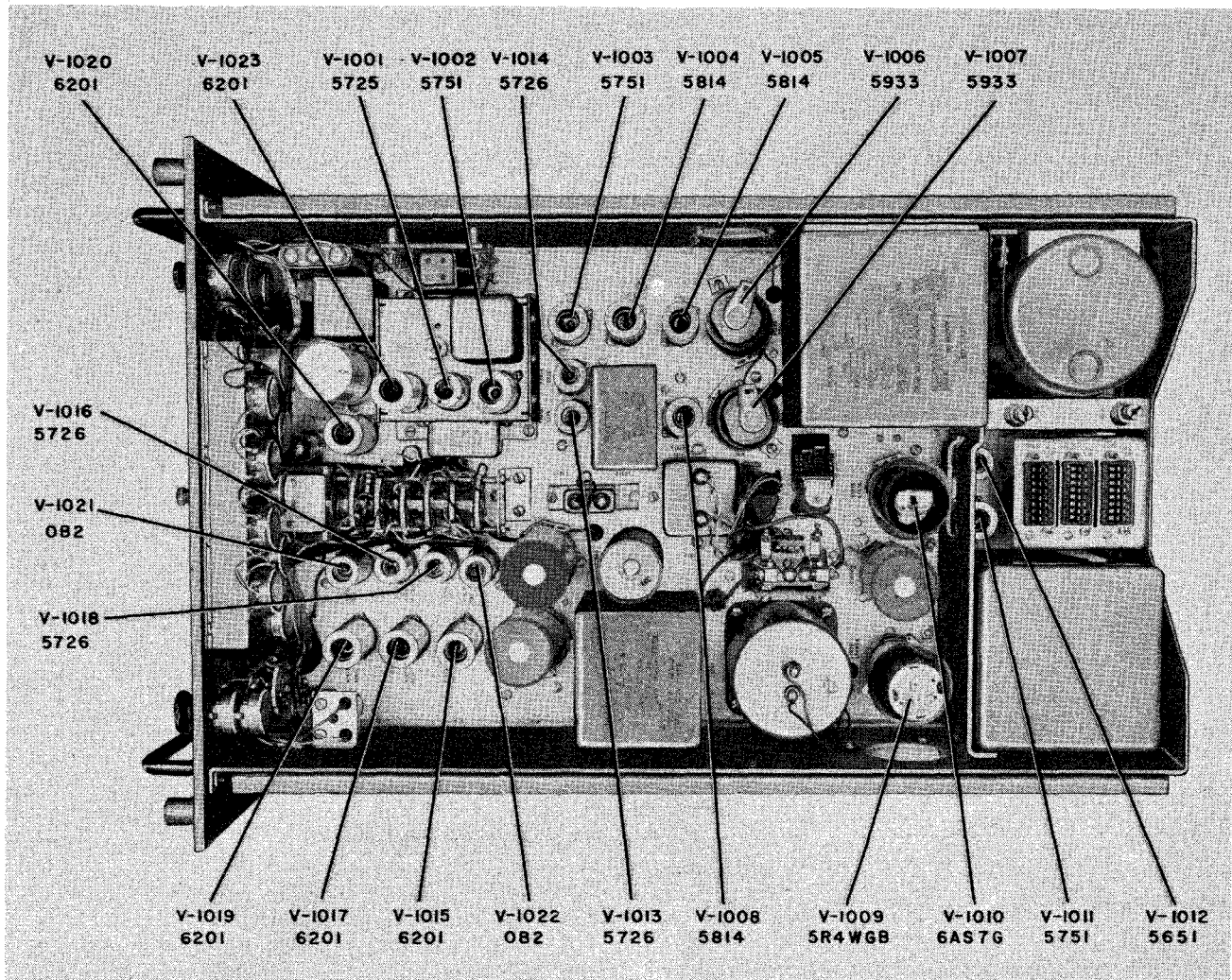


Figure 5-6. Radio Modulator MD-229/SRT (LLRM), Top View, Tube Locations

TABLE 5-8. TUBE LOCATIONS (Cont'd)

| | SYMBOL | TYPE | SYMBOL | TYPE |
|-----|--|------|--------|------|
| 7. | Frequency Multiplier Z-2034 (RFO-Unit 2). (See figure 5-9.) | | | |
| | V-2031 | 5654 | V-2033 | 5814 |
| | V-2032 | 5654 | V-2034 | 5814 |
| 8. | Radio Frequency Oscillator Z-2053 (RFO-Unit 3). (See figure 5-10.) | | | |
| | V-2051 | 6AK6 | | |
| 9. | Frequency Multiplier Z-2103 (RFO-Unit 4). (See figure 5-9.) | | | |
| | V-2101 | 5654 | V-2102 | 5654 |
| 10. | Radio Frequency Oscillator Z-2127 (RFO-Unit 12). (See figure 5-9.) | | | |
| | V-2126 | 6AG5 | V-2128 | 6AK6 |
| | V-2127 | 6AG5 | | |

TABLE 5-8. TUBE LOCATIONS (Cont'd)

| | SYMBOL | TYPE | SYMBOL | TYPE |
|-----|--|-------|--------|------|
| 11. | Electron Frequency Converter Z-2158 (RFO-Unit 5). (See figure 5-9.) | | | |
| | V-2151 | 5725 | V-2153 | 5725 |
| | V-2152 | 5725 | V-2154 | 5654 |
| 12. | Electron Frequency Converter Z-2204 (RFO-Unit 6). (See figure 5-10.) | | | |
| | V-2201 | 5654 | V-2206 | 5725 |
| | V-2202 | 12AU7 | V-2207 | 5725 |
| | V-2203 | 5725 | V-2208 | 5654 |
| | V-2204 | 5654 | V-2209 | 5654 |
| | V-2205 | 6AK6 | | |
| 13. | Frequency Multiplier Z-2305 (RFO-Unit 7). (See figure 5-9.) | | | |
| | V-2301 | 5654 | V-2303 | 5654 |
| | V-2302 | 5654 | V-2304 | 5654 |

TABLE 5-8. TUBE LOCATIONS (Cont'd)

| | SYMBOL | TYPE | SYMBOL | TYPE |
|-----|---|--------|--------|--------|
| 14. | Electron Frequency Converter Z-2330 (RFO—Unit 8). (See figure 5-11.) | | | |
| | V-2326 | 6201 | V-2331 | 5725 |
| | V-2327 | 5725 | V-2332 | 5654 |
| | V-2328 | 5654 | V-2333 | 5654 |
| | V-2329 | 6AK6 | V-2334 | 6AK6 |
| | V-2330 | 5725 | | |
| 15. | Electron Frequency Converter Z-2426 (RFO—Unit 9). (See figure 5-11.) | | | |
| | V-2426 | 5725 | V-2428 | 5654 |
| | V-2427 | 5654 | V-2429 | 6AK6 |
| 16. | Frequency Multiplier Z-2526 (RFO—Unit 10). (See figure 5-11.) | | | |
| | V-2526 | 5654 | V-2528 | 5654 |
| | V-2527 | 5654 | V-2529 | 5654 |
| 17. | Electron Frequency Converter Z-2626 (RFO—Unit 11A). (See figure 5-12.) | | | |
| | V-2626 | 5725 | V-2628 | 5654 |
| | V-2627 | 5654 | V-2629 | 5687 |
| 18. | Electron Frequency Converter Z-2651 (RFO—Unit 11B). (See figure 5-10.) | | | |
| | V-2651 | 5725 | V-2653 | 5654 |
| | V-2652 | 5654 | V-2654 | 6AK6 |
| 19. | Electron Frequency Converter Z-2801 (RFO—Unit 11C). (See figure 5-10.) | | | |
| | V-2801 | 5725 | V-2803 | 5654 |
| | V-2802 | 5654 | V-2804 | 6AK6 |
| 20. | Mounting Z-2901 (RFO—Unit 14). (See figure 5-2.) | | | |
| | V-2917 | 6E5 | | |
| 21. | Power Supply PP-1094/SRT (LVPS). (See figure 5-13.) | | | |
| | V-3001 | 5R4WGB | V-3003 | 5R3WGB |
| | V-3002 | 5R4WGB | | |

Step 1. Short the plate to ground.

Step 2. Loosen the holding screw on top of the plate cap radiator and slip the clip off the plate cap.

Step 3. Release the three captive screws holding the glass chimney and remove the chimney.

Step 4. Loosen the two tube-clamp screws and the clamp adjustment screw.

Step 5. Turn the tube-clamp to clear the two tube-clamp screws and remove the tube.

Note

The plate cap radiator is removed and re-used on the replacement tube. A socket wrench,

provided for this purpose, is attached to the right side of the chassis, forward. (See figure 5-7.)

(b) REPLACING THE PA TUBE.—Replace this tube by simply reversing the removal procedure described in preceding paragraph 3c(2)(a).

(3) REMOVING THE IPA TUBES V-1301 AND V-1302. (See figure 5-7.)—The voltage regulator tube, V-1303, requires no special removal procedure. The other tubes in the Radio Frequency Amplifier are part of the IPA subassembly. These tubes are V-1301 and V-1302. The subassembly cover plate must be removed to gain access to these tubes. V-1302 must be removed before V-1301 can be reached.

Note

The subassembly cover plate has already been removed as seen in figure 5-7 to show the tubes.

(4) CRITICAL TUBES, ADJUSTMENT REFERENCES.—In some of the critical circuits in the Radio Frequency Oscillator O-275/SRT (RFO), certain adjustments may be required after a critical tube has been changed. Table 5-9 is a list of these critical tubes with a reference to the adjustments needed.

TABLE 5-9. CRITICAL TUBES, ADJUSTMENT REFERENCES

| RFO UNIT | TUBE SYMBOL | FIGURE REFERENCE | SECTION AND PARAGRAPH REFERENCE |
|----------|-------------|------------------|---------------------------------|
| 1. | V-2001 | 5-9 | Section 6, paragraph 4g(1)(a) |
| 3. | V-2051 | 5-10 | Section 6, paragraph 4g(2)(a) |
| 6. | V-2202 | 5-10 | Section 6, paragraph 4g(3)(a) |
| | V-2203 | 5-10 | Section 6, paragraph 4g(3)(b) |
| | V-2204 | | |
| | V-2205 | | |
| 8. | V-2327 | 5-11 | Section 6, paragraph 4g(4)(a) |
| | V-2328 | | |
| | V-2329 | | |
| | V-2330 | 5-11 | Section 6, paragraph 4g(4)(b) |
| 12. | V-2331 | | |
| | V-2126 | 5-9 | Section 6, paragraph 4g(5)(a) |
| | V-2127 | | |
| | V-2128 | | |

(5) UNITS WITHOUT TUBES.—The following units contain no tubes:

- (a) Radio Frequency Tuner TN-229/SRT (R-F Tuner)
- (b) Control-Indicator C-1352/SRT
- (c) Antenna Coupler CU-372/SRT (Coupler)
- (d) Transmitter Coupler CU-402/SRT (LAU)
- (e) Mounting MT-1423/SRT (Base Mount)

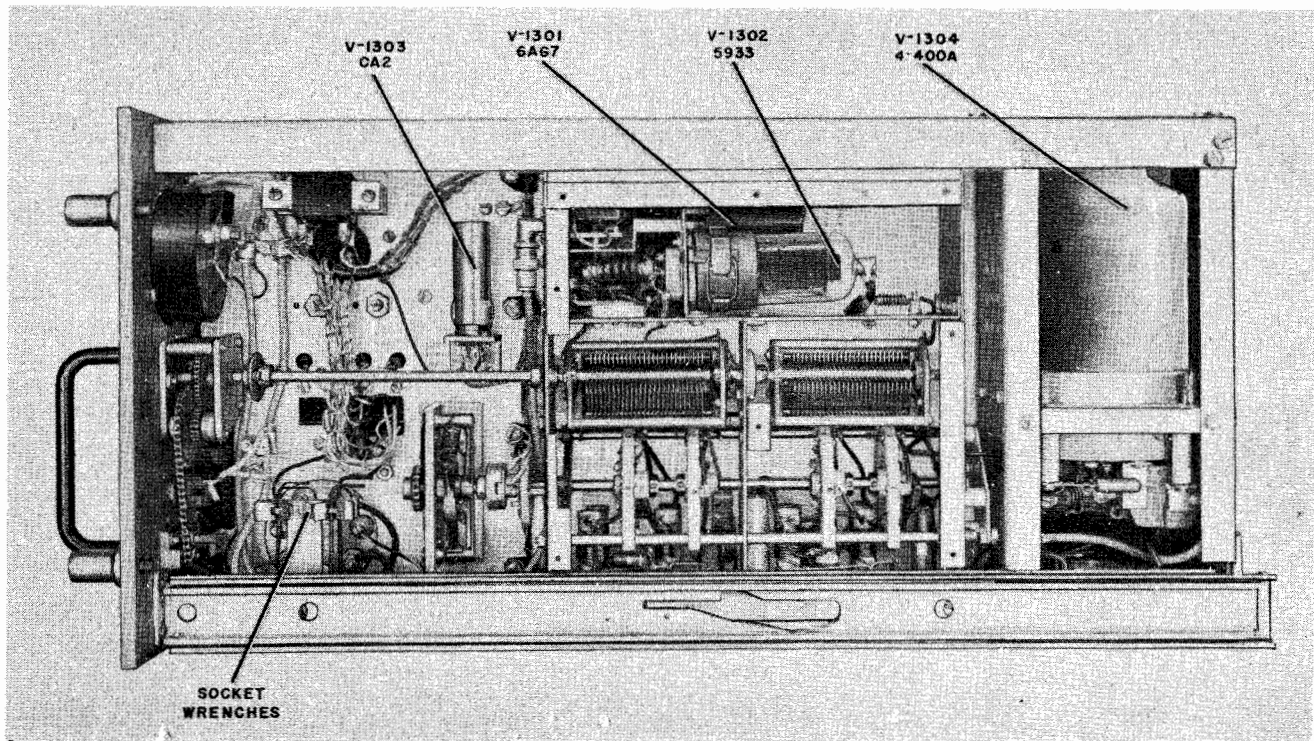


Figure 5-7. Radio Frequency Amplifier AM-1008/SRT (RFA), Right Side, Tube Locations

d. SHUTDOWN PROCEDURE.—The equipment may be completely shut down at the front panel of Power Supply PP-1094/SRT (LVPS) by simply placing EMERGENCY SWITCH (M) in the OFF position. (See figure 5-2.)

Note

With the EMERGENCY SWITCH (M) in its OFF position, all the lamps, except the HEATER ON lamps, will be extinguished.

e. PRESSURIZING THE R-F TUNER AND COUPLER.—When it becomes necessary to recharge either of these units, it is important that only fresh, dry gas be used. Refer to Section 7 for recharging, purging, and exhausting procedures.

f. CHARGING R-F TUNER OR COUPLER. (See figure 5-15.)—When pressure in the r-f tuner or the coupler falls below 15 psi, it will be necessary to add more nitrogen to bring the pressure up to its normal 20 psi. A method for charging these units follows:

Note

This procedure, with its accompanying illustration, pertains to the r-f tuner. However, the antenna coupler is treated in exactly the same manner.

Step 1. Check the regulator (1) to be sure that the adjusting screw (2) and the needle valve (3) are closed at this time.

Step 2. Fasten the delivery hose (4) securely to the regulator (1) by means of the hose coupling nut (5).

Step 3. Attach the regulator (1) to the gas cylinder and secure the hexagonal inlet coupling nut (6).

Step 4. Connect the delivery hose (4) to the r-f tuner intake valve (7).

Step 5. Open the cylinder valve (8).

Note

With a full 9-cubic foot nitrogen gas cylinder, the cylinder-pressure gauge (9) on the regulator (1) should read about 1,600 psi.

Step 6. Open the adjusting screw (2) until the delivery-pressure gauge (10) reads 20 psi.

Note

The exhaust valve (11) is not used, except for purging or exhausting the cylinder as outlined in Section 7.

Step 7. Open the needle valve (3) and bring the r-f tuner pressure up to 20 psi as indicated on the r-f tuner pressure gauge (12). When the desired pressure is attained, the cylinder valve (8) is closed. The regulator (1) may then be removed from the gas cylinder.

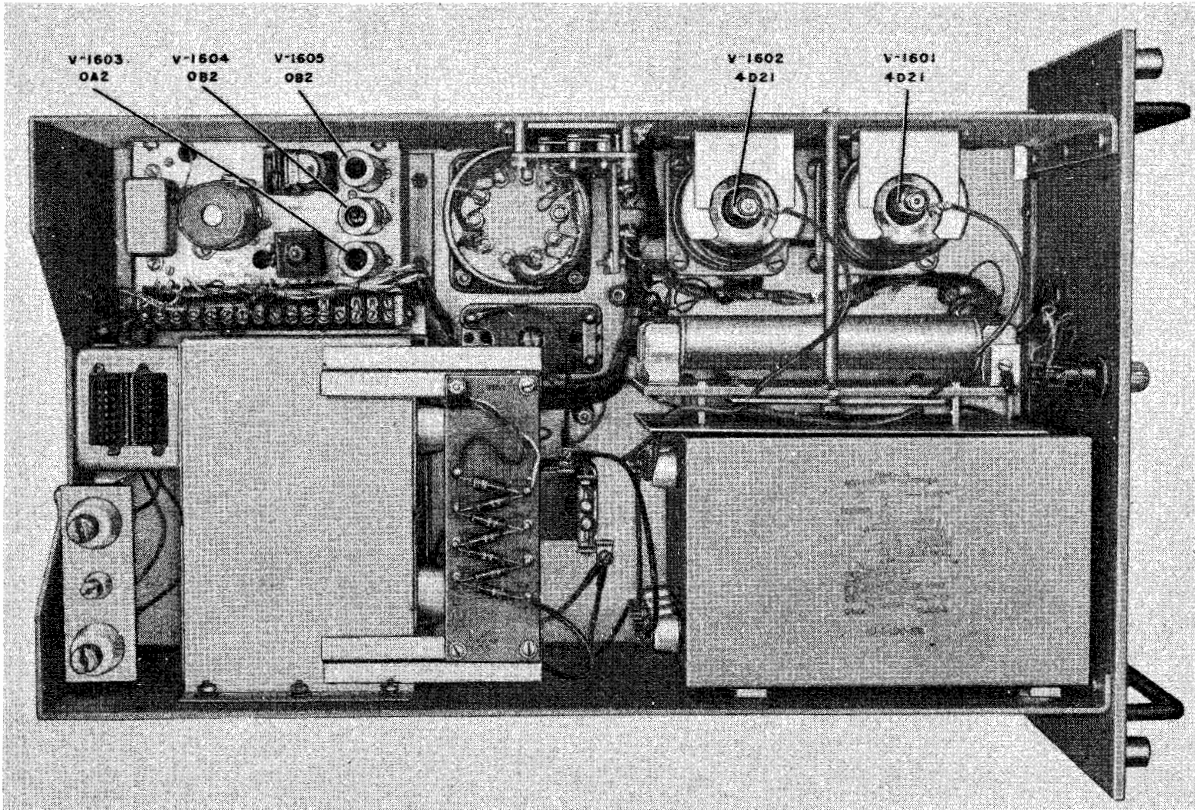


Figure 5-8. Radio Modulator MD-230/SRT (HLRM), Top View, Tube Locations

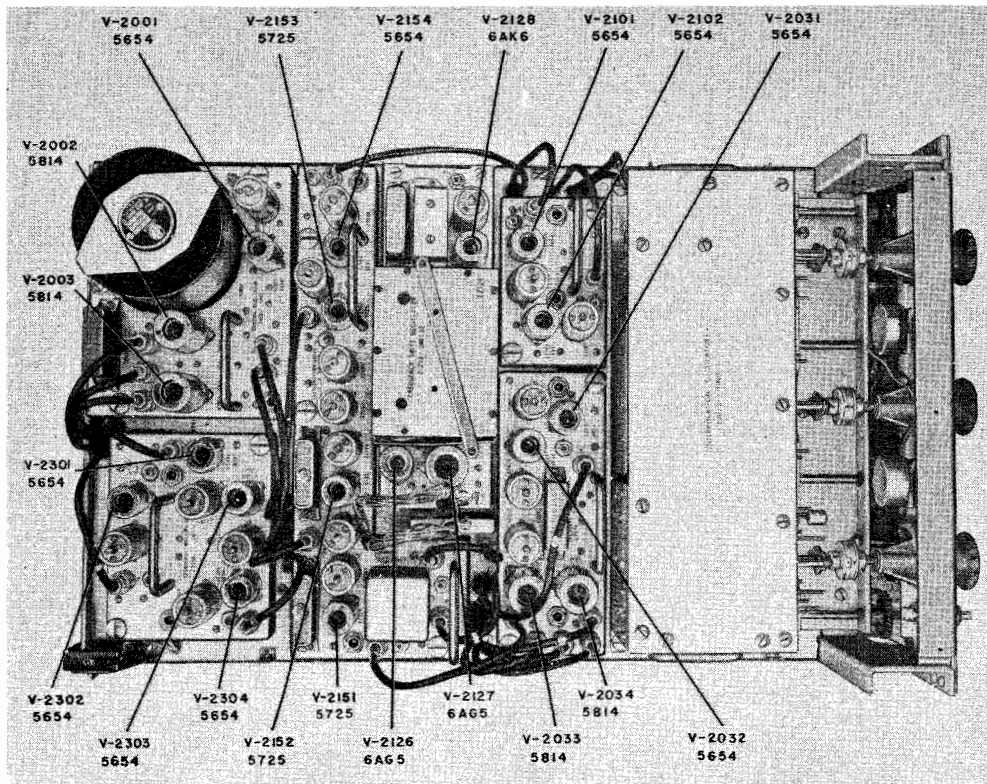


Figure 5-9. Radio Frequency Oscillator O-275/SRT (RFO), Top View, Tube Locations

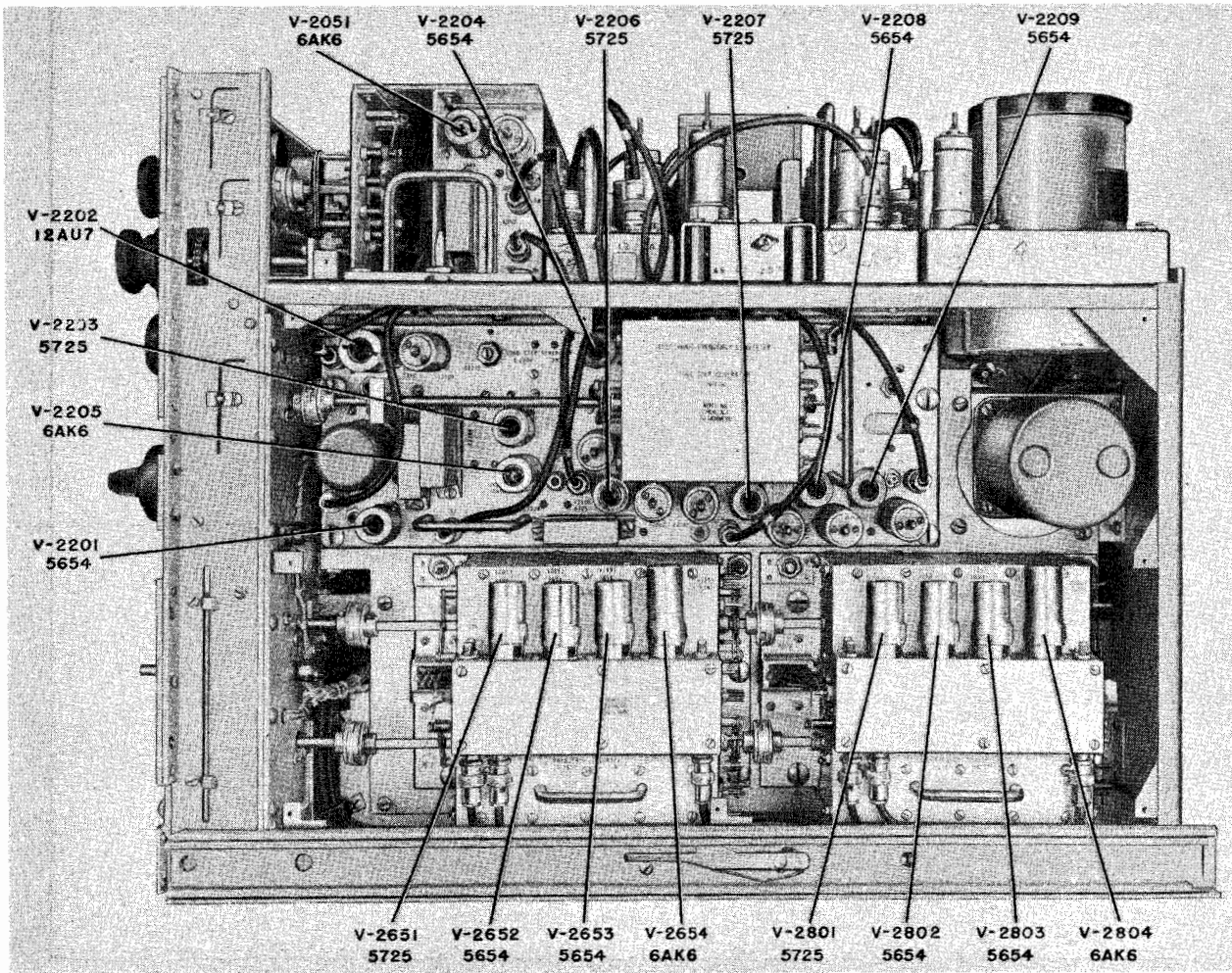


Figure 5-10. Radio Frequency Oscillator O-275/SRT (RFO), Right Side, Tube Locations

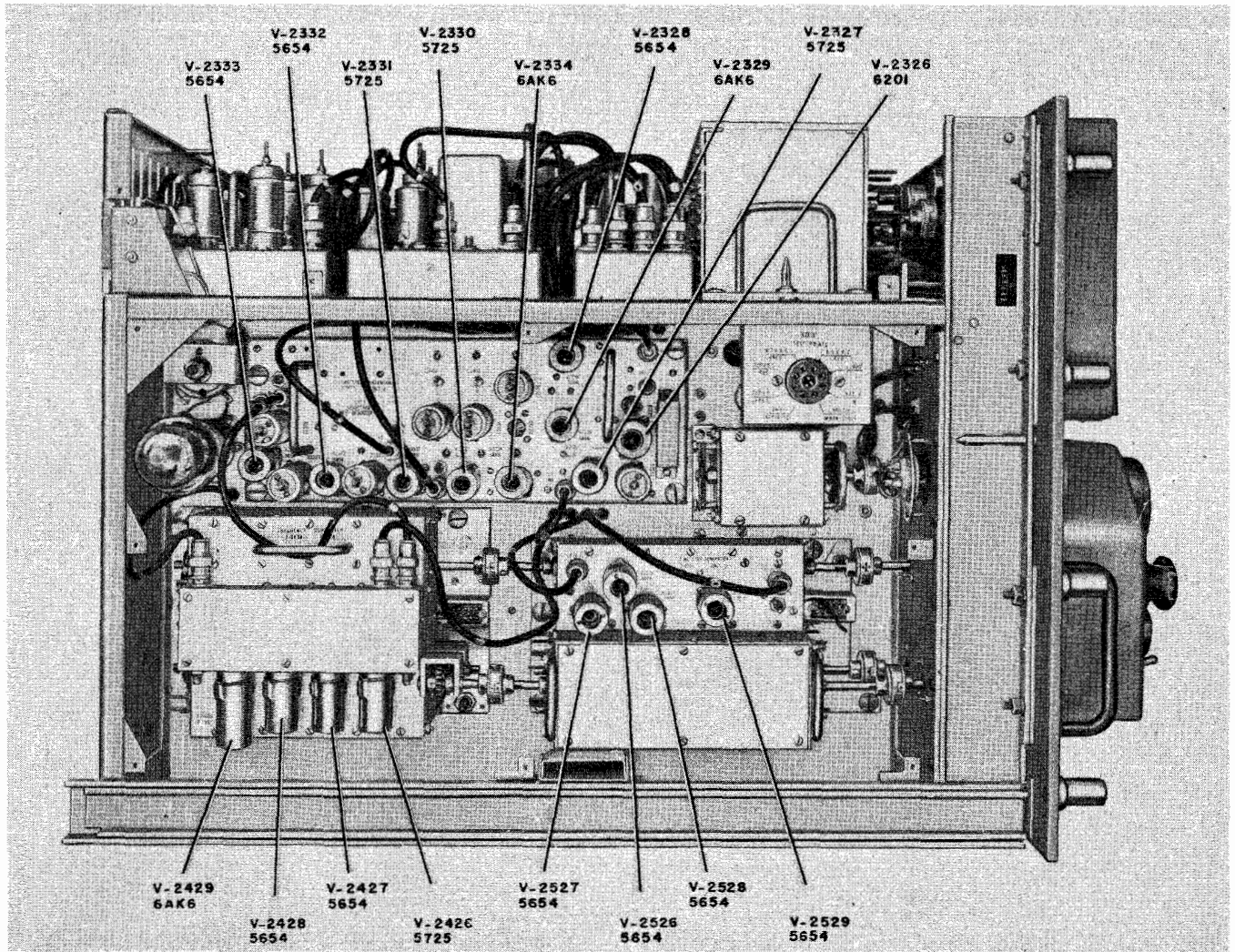


Figure 5-11. Radio Frequency Oscillator O-275/SRT (RFO), Left Side, Tube Locations

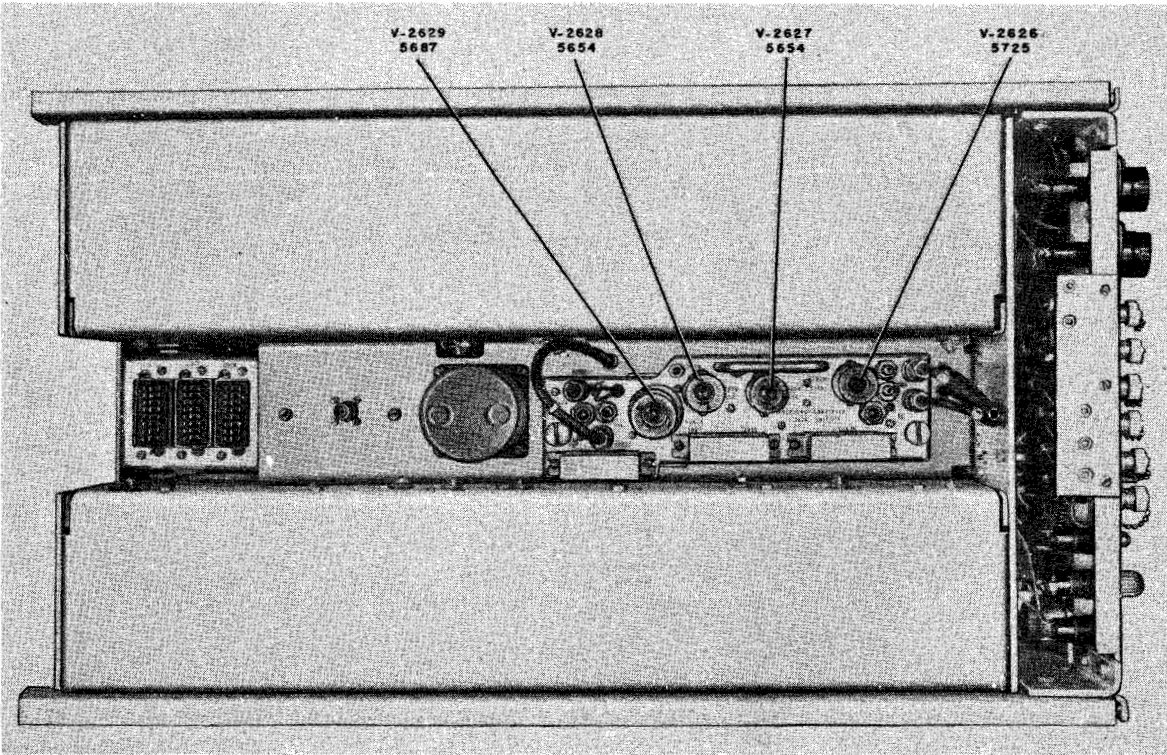


Figure 5-12. Radio Frequency Oscillator O-275/SRT (RFO), Bottom View, Tube Locations

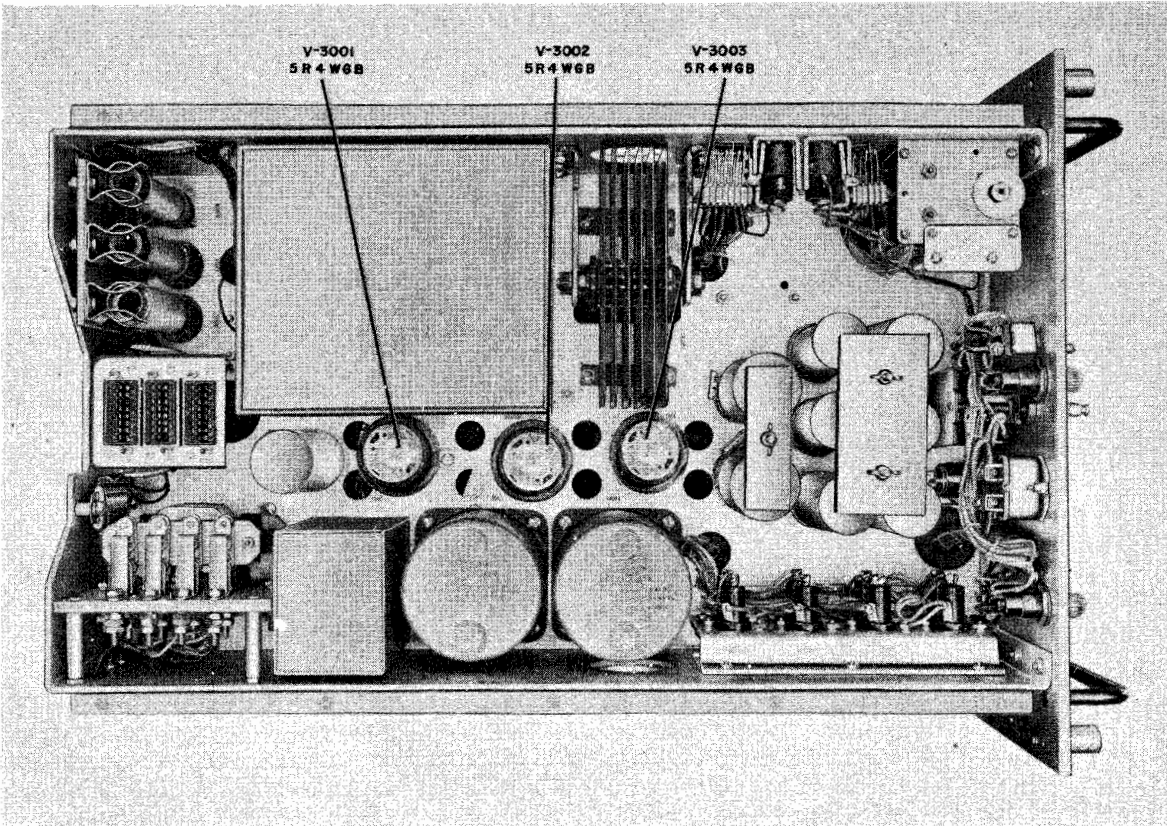


Figure 5-13. Power Supply PP-1094/SRT (LVPS), Top View, Tube Locations

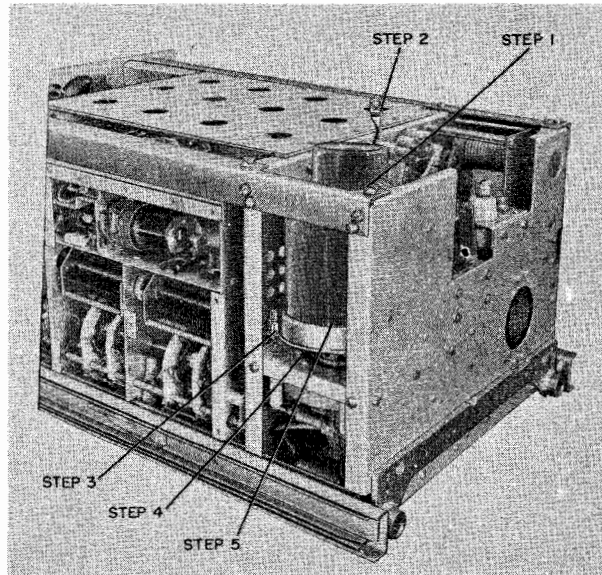


Figure 5-14. Removing the PA Tube, V-1304

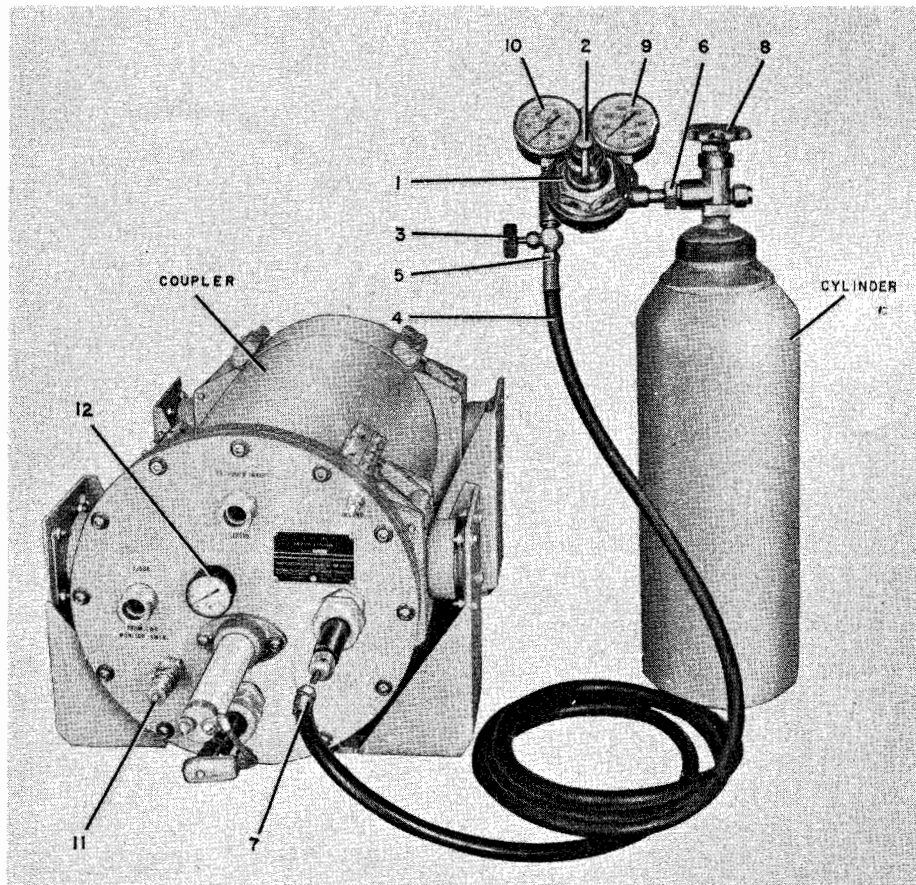


Figure 5-15. Typical Pressurizing Method

NOTES

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NAVSHIPS 92121(A)

INSTRUCTION BOOK

for

RADIO TRANSMITTING SETS

**AN/SRT-14, AN/SRT-14A, AN/SRT-15,
AN/SRT-15A, AN/SRT-16 AND AN/SRT-16A**

SECTION 6

PREVENTIVE MAINTENANCE

FEDERAL TELEPHONE AND RADIO COMPANY

A division of INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

CLIFTON, NEW JERSEY

DEPARTMENT OF THE NAVY

BUREAU OF SHIPS

★
*Contract: NObsr-52021
NObsr-52622*

Approved by BuShips: 26 October 1955

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| 6-12 | Lubricating Greases | 6-29 |
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**SECTION 6
PREVENTIVE MAINTENANCE**

1. GENERAL.

Preventive maintenance is routine procedure that is used to check needless breakdown of running equipment and to keep it working efficiently for as long a period as possible. If wear is noticed and checked at an early stage, a serious shutdown may be avoided. Constant and careful inspection, care in replacement and handling procedures, together with the use of proper methods of assembly and disassembly of parts, are all necessary in contributing to the over-all efficient maintenance of the equipment. Accurate records must be kept and a series of routine checks instituted. These will be explained in more detail later in this section. Figure 6-1 illustrates a typical Radio Transmitting Set AN/SRT-15 installation.

Note

The AN/SRT-14A, 15A and 16A are non-magnetic versions of the AN/SRT-14, 15 and 16 respectively. As the nonmagnetic versions vary from the standard types only in the material used for cabinet panels, all information on preventive maintenance for AN/SRT-14, 15 and 16, as set forth in this section, applies equally as well to AN/SRT-14A, 15A and 16A.

Note

Where, throughout this section, reference is made to either low level radio modulator or high level radio modulator, it should not be interpreted as meaning the technique of modulation known as grid modulation or low level modulation, but rather as referring to the operating *power* level.

2. INITIAL CHECKS.

Certain fundamental precautions should be observed before actually placing the equipment in operation. Every effort should be made to become familiar with the equipment in order to recognize and anticipate avoidable defects. Table 6-1 should be used to assist in making these fundamental observations.

3. RFA METER READINGS.

All the readings should be taken under the same conditions and with the same antenna or dummy load. Weekly readings are to be made and compared with those of the previous week, so as to check the various conditions existing. It should be borne in mind that various production line tubes will vary considerably in their current output readings. A definite trend or fluctu-

TABLE 6-1. INITIAL CHECKS

| ITEM | CHECK |
|----------------------|--|
| 1. Primary Power | The ship power supply must be available at all times. |
| 2. Control Equipment | Radiophone, teletype, facsimile, hand keys and other control equipment must be in good working order and connected properly. |
| 3. Insulators | Antenna and line insulators must be kept clean and free of unwanted grounds. |
| 4. Cables | All internal and external cables must be firmly and properly connected. |
| 5. Dirt and Moisture | Leakage paths are often provided by dirt and moisture, resulting in arc-overs and loss of efficiency. |
| 6. Loose Parts | In operation, some mountings or fittings may work loose or become damaged. Correct this condition as quickly as possible. |
| 7. Visual Check | Check for broken, damaged, or loose hardware, meters, knobs, dials or lamps. Replace damaged parts without delay. |

ation in the readings is to be interpreted as an indication of trouble. By charting these fluctuations, a reliable record of tube performance is available for ready reference, and trouble may be avoided by changing tubes before a critical stage is reached.

a. 100-WATT OPERATION.—With the equipment operating at the 100-watt level, the readings on the various meters associated with Radio Frequency Amplifier AM-1008/SRT (RFA) should read approximately as in table 6-2. The following conditions prevailed for these typical readings:

- (1) Line voltage—110/220 volts.
- (2) Load—50 ohms (resistive).
- (3) Phone modulation—100 percent.
- (4) TEST KEY (Ⓟ)—energized.
- (5) Frequency—2 mc.

Note

The nominal readings in table 6-2 are to be used for reference only. Some of the readings are dependent on the setting of the EXCITATION control (Ⓡ).

b. 500-WATT OPERATION.—With the equipment operating at the 500-watt level, the readings on the RFA meters should read approximately as in table 6-3 under the following conditions:

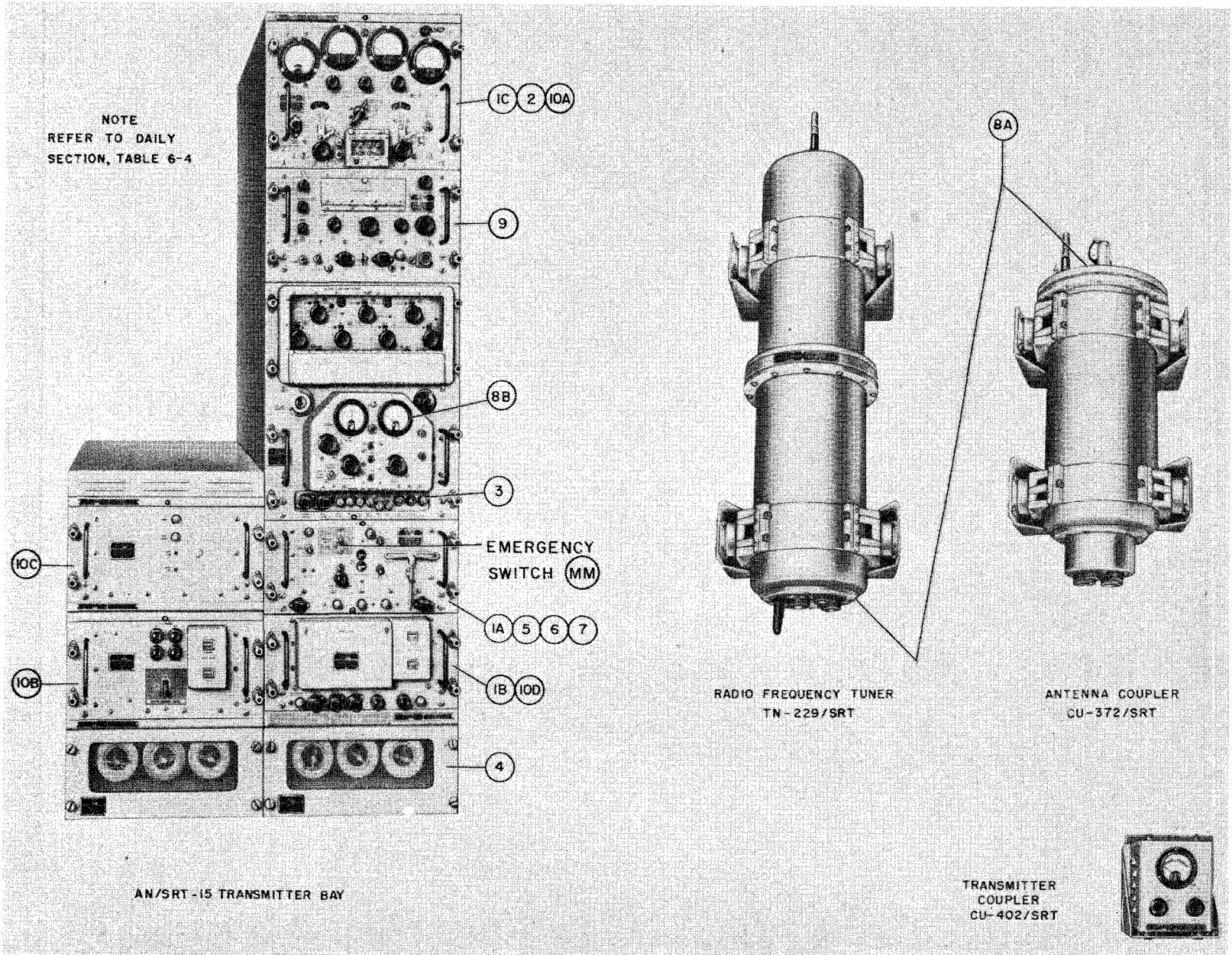


Figure 6-1. Daily Routine Maintenance Checks, AN/SRT-15

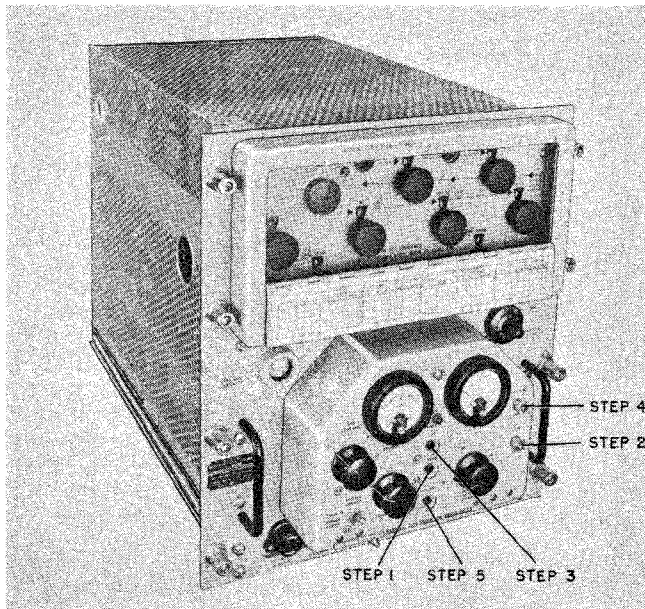


Figure 6-2. Control-Indicator C-1352/SRT, Adjustments for R-f Tuner Control

TABLE 6-2. RFA METER READINGS, 100-WATT OPERATION

| CONTROL SETTINGS | VOLTMETER READINGS | |
|-----------------------------|-----------------------------------|-------------|
| | PHONE | CW |
| VOLTMETER ① Switch: | | |
| RF IN (5 V) | 2.5-5.0 V | 2.5-5.0 V |
| BIAS (500 V) | 200-215 V | 200-215 V |
| LV (500 V) | 260-315 V | 260-315 V |
| MV (1000 V) | 430-525 V | 430-525 V |
| PA E _{c2} (1000 V) | 220-300 V | 220-300 V |
| PA E _b (5000 V) | 900-1100 V | 1100-1365 V |
| | IPA CURRENT METER READINGS | |
| IPA ⑥ Switch: | | |
| I _{c1} (5 MA) | 0.5-3.5 ma | 0.5-3.5 ma |
| I _{c2} (10 MA) | 5-8 ma | 5-8 ma |
| I _k (500 MA) | 50-80 ma | 50-80 ma |
| | PA CURRENT METER READINGS | |
| PA ⑧ Switch: | | |
| I _{c1} (50 MA) | 15-25 ma | 18-30 ma |
| I _{c2} (100 MA) | 50-80 ma | 40-70 ma |
| I _k (1 A) | 200-350 ma | 200-350 ma |

- (1) Line voltage—110/220 volts.
- (2) Load—50 ohms (resistive).
- (3) Phone modulation—100 percent.
- (4) TEST KEY ⑦—energized.
- (5) Frequency—2 mc.

ORIGINAL

Note

The nominal readings in table 6-3 are to be used for reference only. Some of the readings are dependent on the setting of the EXCITATION control ⑦. The BAND SWITCH ⑥ must be in the 2-5 MC position. A lower band position will prevent 500-watt operation.

TABLE 6-3. RFA METER READINGS, 500-WATT OPERATION

| CONTROL SETTINGS | VOLTMETER READINGS | |
|-----------------------------|-----------------------------------|-------------|
| | PHONE | CW |
| VOLTMETER ① Switch: | | |
| RF IN (5 V) | 2.5-5.0 V | 2.5-5.0 V |
| BIAS (500 V) | 200-215 V | 200-215 V |
| LV (500 V) | 285-315 V | 285-315 V |
| MV (1000 V) | 475-525 V | 475-525 V |
| PA E _{c2} (1000 V) | 390-500 V | 400-525 V |
| PA E _b (5000 V) | 2280-2520 V | 2850-3150 V |
| | IPA CURRENT METER READINGS | |
| IPA ⑥ Switch: | | |
| I _{c1} (5 MA) | 0.5-3.5 ma | 0.5-3.5 ma |
| I _{c2} (10 MA) | 6-9 ma | 6-9 ma |
| I _k (500 MA) | 50-80 ma | 50-80 ma |
| | PA CURRENT METER READINGS | |
| PA ⑧ Switch: | | |
| I _{c1} (50 MA) | 15-25 ma | 12-20 ma |
| I _{c2} (100 MA) | 20-60 ma | 15-50 ma |
| I _k (1 A) | 300-450 ma | 300-450 ma |

4. MAINTENANCE CHECKS.

a. ROUTINE MAINTENANCE CHECK CHART.

Note

For the following checks and adjustments, make sure that the equipment is not being operated from the remote location, except for the item specifically called "Remote Operation". Refer to Section 5, table 5-1, which may be used to check nomenclature references.

Table 6-4 will enable the technician to check and adjust the equipment in a regular, orderly manner.

Note

The attention of maintenance personnel is invited to the requirements of chapter 67 of the *Bureau of Ships Manual*, of the latest issue. Personnel are also requested to read the safety instructions included in the front matter of this book.

TABLE 6-4. ROUTINE MAINTENANCE CHECK CHART











| WHAT TO CHECK | HOW TO CHECK | PRECAUTIONS |
|--|--|--|
| WARNING Dangerous voltages exist in the AN/SRT-14, 15 and 16 equipment. The technician should familiarize himself with the voltages present in any chassis in which a check for adjustment is to be made. Before removing a chassis in the transmitter group, turn the EMERGENCY SWITCH  (see figure 6-1) on the front panel of the LVPS to OFF. This will shut down the equipment. | | |
| 1. General Sequence 100-Watt Operation | DAILY (See figure 6-1.) Note The short or common names used in this section are taken from Section 5, table 5-1. | Note Refer to table 5-2, Preliminary Control Positions, before starting these checks. The equipment is presumed to be not operating at this time. |
| a. Power Supply PP-1094/SRT (LVPS) | (See 1A, figure 6-1.) Step 1. Place EMERGENCY SWITCH  in ON position. | |
| | Step 2. Place STANDBY-OPERATE switch  in OPERATE. | |
| | Step 3. Press START button of MAIN POWER switch  . | The MAIN POWER INDICATOR will be illuminated only after the START button of the MAIN POWER switch  is energized. After time delay, the following lamps will light: (1) TIME DELAY (LVPS) (2) +250 V (3) +300 V (4) -220 V (5) 500 V PRI. (MVPS) (6) 500 V OUTPUT (7) 1300 V OUTPUT (8) 1300 V PRI. |
| b. Power Supply PP-1095/SRT (MVPS) | (See 1B, figure 6-1.) TOTAL HOURS-FILAMENT meter begins to operate when MAIN POWER switch  is energized. | The MAIN POWER INDICATOR will be illuminated only after the START button of the MAIN POWER switch  is energized. After time delay, the following lamps will light: (1) TIME DELAY (LVPS) (2) +250 V (3) +300 V (4) -220 V (5) 500 V PRI. (MVPS) (6) 500 V OUTPUT (7) 1300 V OUTPUT (8) 1300 V PRI. |
| | Note The readings on the TOTAL HOURS-FILAMENT meter may be co-ordinated with a record of RFA meter changes to give significant data of tube life expectancy. Record the meter readings at time of tube changes. (Refer to table 6-13.) | TOTAL HOURS-FILAMENT meter is protected by fuse marked FILAMENTS (F-503) on front panel. Meter will operate with the OPERATE-STANDBY switch  (LVPS) in either position. Note The meter reads in tenths-of-an-hour and operates during the time filament power is applied. |
| | TOTAL HOURS-PLATE meter will begin to register when the 500-volt plate supply is energized after time delay. | Meter will not operate when STANDBY-OPERATE switch  (LVPS) is in STANDBY. |
| c. Radio Frequency Amplifier AM-1008/SRT (RFA) | (See 1C, figure 6-1.) | The 100 W-READY lamp on the RFA will be illuminated. |
| 2. RFA Blower | (See 2, figure 6-1.) The RFA blower starts when the MAIN POWER switch  on the LVPS is energized. | Check blower by listening for operation. |

TABLE 6-4. ROUTINE MAINTENANCE CHECK CHART (Cont'd)

| WHAT TO CHECK | HOW TO CHECK | PRECAUTIONS |
|--|---|---|
| 3. RFO Oven Heaters (HEATER ON) | (See 3, figure 6-1.) The indicators for the oven heaters are marked: a. INT. b. X-TAL c. F.S. | These lamps have their own supply and operate intermittently. Always check lamps first, if trouble is suspected. |
| 4. Base Mount Blowers | (See 4, figure 6-1.) After the time delay, the base mount blowers will operate. | Listen for blower operation, after time delay. |
| 5. Cabinet Heater | (See 5, figure 6-1.) Turn CABINET HEATER switch Ⓜ to its ON position. | The CABINET HEATER lamp will be illuminated. If trouble is suspected, check lamp first. Note Keep CABINET HEATER switch Ⓜ in OFF position, unless the heaters are needed. |
| 6. INTERLOCK BATTLE SHORT switch Ⓜ | (See 6, figure 6-1.) Place switch in ON position; the lamp marked INTERLOCK SHORTED WHEN ON will be illuminated. | The INTERLOCK BATTLE SHORT switch Ⓜ bypasses the drawer interlocks and allows operation of the equipment even with a component removed from its drawer. |
| 7. INT. TEST jacks (Interlock Continuity) | (See 7, figure 6-1.) Place ohmmeter leads across test jacks as a check for continuity. | The INTERLOCK BATTLE SHORT switch Ⓜ is in OFF position for this check. If no continuity is indicated, check the various chassis interlocks or their cheater switches. |
| 8. R-F Tuner and Antenna Coupler a. Pressure Gauges b. R-F Tuner control | (See 8A, figure 6-1.) Check readings on pressure gauges. (See figure 6-2.) <i>Step 1.</i> Press DOWN button on control-indicator until pointer of POSITION meter stops at bottom of scale. | Each gauge should read 20 psi. Refer to paragraph 6m for pressurizing information. Note Reading of these gauges daily is based on the premise that the units are readily available. Should these units be placed in remote positions a revision of the schedule may be needed. |
| | <i>Step 2.</i> Zero the POSITION meter by loosening the nut on the ZERO ADJ. control and set the pointer on 0. | |
| | <i>Step 3.</i> Press UP button until POSITION meter shows maximum. | |
| | <i>Step 4.</i> Adjust for full scale deflection by loosening locknut on FULL SCALE ADJ. control and set pointer on 100. | |
| | Note Repeat the preceding steps, if needed, to trim to optimum. | |
| | <i>Step 5.</i> After the trimming adjustments, check speed of traverse when the SLOW button is pressed simultaneously with UP or DOWN. | |
| | | Note Be sure to relock the nuts on the adjustment controls after trimming and adjusting. |

TABLE 6-4. ROUTINE MAINTENANCE CHECK CHART (Cont'd)

| WHAT TO CHECK | HOW TO CHECK | PRECAUTIONS |
|--|--|--|
| 9. Remote Operation | (See 9, figure 6-1.) Place LOCAL-REM switch ⊗ in REM position. | In remote operation, the equipment is operated from the remote Navy radio- phone unit. |
| 10. General Sequence 500-Watt Operation | | Note At this time, the equipment is presumed to be in 100-watt operation. |
| a. Radio Frequency Amplifier AM-1008/SRT (RFA) | (See 10A, figure 6-1.) <i>Step 1.</i> Energize the PUSH FOR 500 W switch ⊕. | |
| b. Power Supply PP-1096/SRT (HVPS) | (See 10B, figure 6-1.) <i>Step 2.</i> Place BOOSTER EMERGENCY SWITCH ⊗ in ON position. | The following lamps will be illuminated: (1) φ1 (2) φ2 (3) H.V. φ3 The TOTAL HOURS-500 W elapsed-time meters will operate. |
| c. Radio Modulator MD-230/SRT (HLRM) | (See 10C, figure 6-1.) | The following lamp will also light: (1) 3000 V (HLRM) |
| d. Power Supply PP-1095/SRT (MVPS) | (See 10D, figure 6-1.) | The following lamps will be extinguished: (1) 1300 V OUTPUT (MVPS) (2) 1300 V PRI. |
| 1. Radio Frequency Amplifier AM-1008/SRT (RFA) Meter Readings | WEEKLY (See 1, figure 6-3.) Note A form should be prepared to record the weekly meter readings. A comparison of the week-by-week readings will be useful for checking tube performance. | Refer to paragraph 4b, table 6-5, for typical example of form to be used. Table 6-2 gives typical RFA meter readings. |
| 2. Radio Frequency Oscillator O-275/SRT (RFO): Metering Socket, E-2919 | (See 2, figure 6-3.) Measure from each pin to pin 1 (GND.). These test points are found on the left side of the RFO, just forward of unit 8, under the cover plate. (See figure 6-4.) | Refer to paragraph 4c, table 6-6, RFO Metering Socket Voltages, for typical form to be used. |
| 3. Radio Modulator MD-229/SRT (LLRM) | (See 3, figure 6-3.) Check from test point (250 V.P.S.) on LLRM front panel to ground. | Refer to paragraph 4d, table 6-7, Front Panel Test Point Voltages. |
| 4. Power Supply PP-1094/SRT (LVPS) | (See 4, figure 6-3.) Check from test points to ground: a. +250 V b. +300 V c. -220 V | |
| 5. Radio Modulator MD-230/SRT (HLRM) | (See 5, figure 6-3.) Grid No. 1 - V-1601 Grid No. 1 - V-1602 | |
| 6. Power Supply PP-1095/SRT (MVPS) | (See 6, figure 6-3.) CAUTION 500 V OUTPUT Check from test jack to ground. | |

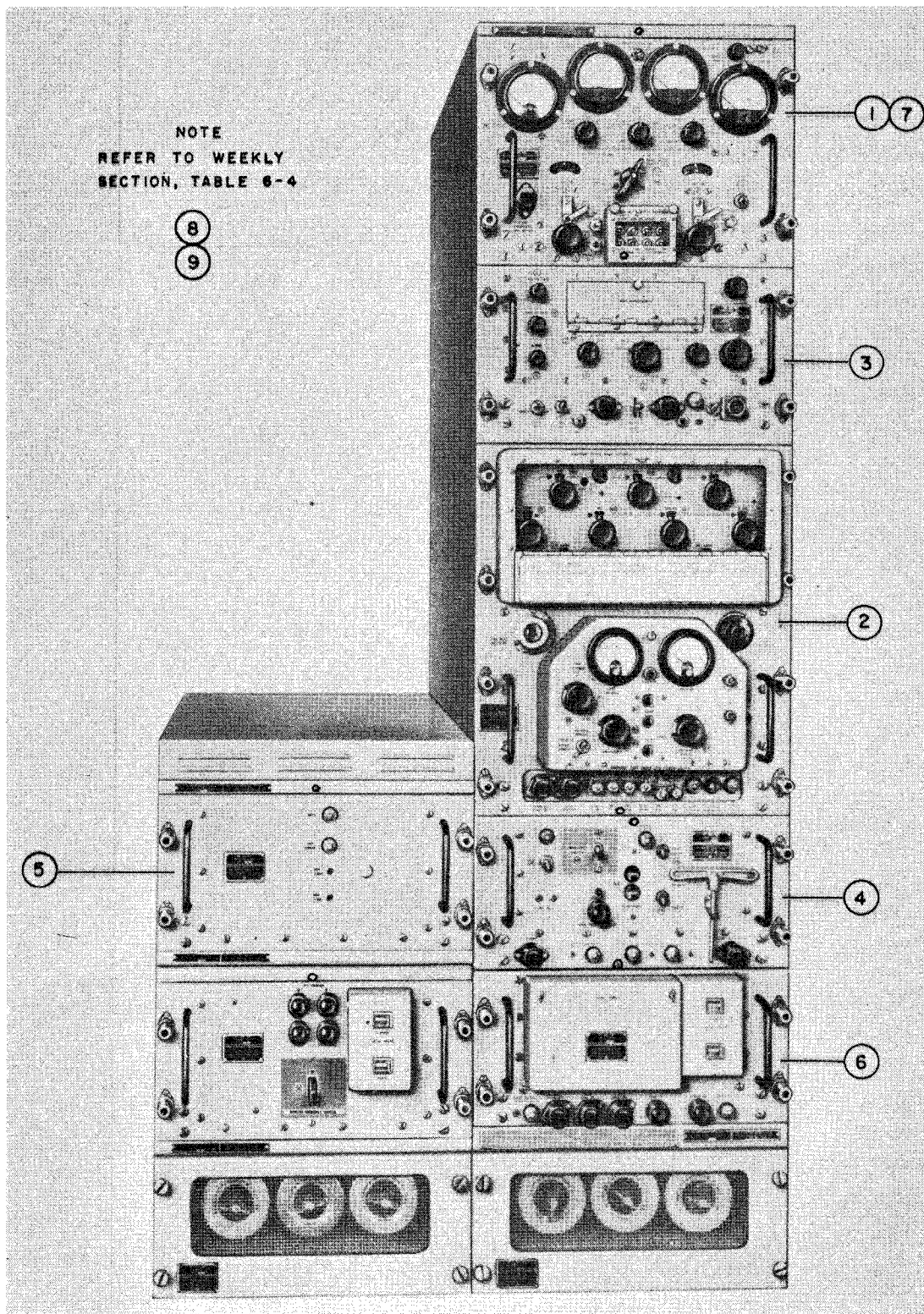


Figure 6-3. Weekly Routine Maintenance Checks, AN/SRT-15 Transmitter Bay

TABLE 6-4. ROUTINE MAINTENANCE CHECK CHART (Cont'd)

| WHAT TO CHECK | HOW TO CHECK | PRECAUTIONS |
|--|---|--|
| 7. Modulation Check: (LLRM) | (See 7, figure 6-3.) Talk or whistle into the microphone. Observe the ANT CURRENT meter. | The ANT CURRENT meter will show an increase in antenna current with an increase in modulation. When the ANT CURRENT meter shows a decrease in antenna current with an increase in modulation, it is an indication of overmodulation. |
| 8. Temperature and Ventilation | Check temperatures in and around the equipment. | The blowers in the RFA and the base mounts must be working when the equipment is energized. If humidity is excessive, use CABINET HEATER switch Ⓜ on LVPS. |
| 9. Deck and Lead-in Insulators | Check these insulators for dust and dirt. | Dirty insulators may be cleaned with Dry Cleaning Solvent P-S-661b. Replace insulators that cannot be cleaned. |
| 1. Radio Modulator MD-229/SRT (LLRM) Keying Voltages | MONTHLY | |
| | (See 1, figure 6-5.) <i>Step 1.</i> Refer to paragraph 2a, Section 5, table 5-2, Preliminary Control Positions, and check transmitter controls against this table. | |
| | <i>Step 2.</i> Connect Multimeter ME-25A/U between pin 7 (VOLTS MARK-SPACE) of metering socket E-2919, and pin 1, GND. | The metering socket E-2919 is located on the left side of the RFO. (See figure 6-4.) |
| | <i>Step 3.</i> With SERVICE SELECTOR switch Ⓚ of LLRM in FSK, a reading of (-)10 volts should be obtained. | |
| | <i>Step 4.</i> Place SPACE-OPER.-MARK switch Ⓛ in MARK. A reading of (+)10 volts should be obtained. | Section 7 of this instruction book provides for corrective measures. Consult Section 7 when meter readings show deviations from normal. |
| <i>Step 5.</i> Check other LLRM keying voltages as shown in table 6-8, LLRM Keying Voltages. | | |
| 2. Radio Frequency Oscillator O-275/SRT (RFO) <i>a.</i> Test Jack Voltages | (See 2, figure 6-5.) Refer to paragraph 4f, table 6-9, RFO Unit Test Jack Voltages. | |
| <i>b.</i> Unit Checks and Adjustments | (See 2, figure 6-5.) | |
| (1) Unit 1. | Refer to paragraph 4g(1) for unit 1 check and adjustment. | |
| (2) Unit 3. | Refer to paragraph 4g(2) for unit 3 check and adjustment. | |
| (3) Unit 6. | Refer to paragraphs 4g(3)(a) and 4g(3)(b) for unit 6 checks and adjustments. | |
| (4) Unit 8. | Refer to paragraphs 4g(4)(a) and 4g(4)(b) for unit 8 checks and adjustments. | |
| (5) Unit 12. | Refer to paragraph 4g(5) for unit 12 check and adjustment. | |

TABLE 6-4. ROUTINE MAINTENANCE CHECK CHART (Cont'd)

| WHAT TO CHECK | HOW TO CHECK | PRECAUTIONS |
|--|---|---|
| 3. Blower Motors <i>a.</i> RFA Blower <i>b.</i> Base Mount Blowers | (See 3A and 3B, figure 6-5.) With equipment turned on, check motors for abnormal or noisy operation. | Refer to Section 7 for disassembly procedures, if necessary. |
| 4. Ventilators and Louvers | Check all air passages, screens and ducts for dirt and obstructions. | Air should flow freely through all louvers and screens during operation of the equipment. |
| 5. Variable Capacitors | Refer to paragraph 6 <i>b</i> . | |
| 6. Relays | Refer to paragraph 6 <i>c</i> . | |
| 7. Jacks and Plugs | Refer to paragraph 6 <i>d</i> . | |
| 8. Transmitter Group Gears and Racks | Refer to paragraph 6 <i>e</i> . | |
| 9. Lubrication | Refer to paragraph 5 <i>d</i> (2). | |
| | QUARTERLY | |
| 1. Cleaning | Refer to paragraph 5 <i>b</i> . | |
| 2. Lubrication | Refer to paragraph 5 <i>d</i> (1). | |
| 3. Shafts | Refer to paragraph 6 <i>a</i> . | |
| | ANNUALLY | |
| 1. Chains | Refer to paragraph 6 <i>g</i> . | |
| 2. R-F Tuner and Coupler Gears and Racks | Refer to paragraph 6 <i>e</i> . | |
| 3. Motors | Refer to paragraph 6 <i>j</i> . | |
| 4. Lubrication | Refer to paragraph 5 <i>d</i> (3), for annual lubrication procedures. | |
| | BIENNIALLY | |
| 1. Lubrication | Refer to paragraph 5 <i>d</i> (4). | |
| | THREE YEARS | |
| 1. R-F Tuner and Antenna Coupler Bearings | Refer to paragraph 6 <i>b</i> . | |
| 2. Lubrication | Refer to paragraph 5 <i>d</i> (5). | |
| | MAJOR OVERHAUL | |
| 1. Cleaning and Checking Equipment | Refer to paragraph 5 <i>b</i> . | Replace burred or damaged hardware. Replace frayed insulation or repair with tape or spaghetti. Check tube sockets and terminal boards. |
| 2. Lubrication | Refer to paragraph 5 <i>d</i> (6). | Refer to Section 7 for disassembly of the parts involved in these procedures. |
| 3. Wafer Switches and Detents | Refer to paragraph 6 <i>f</i> . | |

b. RFA METER READINGS, WEEKLY RECORD.
—Table 6-5 is a form which may be used to record the weekly readings of the RFA panel meters. Observe the following:

(1) The equipment controls are to be in the positions designated in Section 5, table 5-2.

(2) Three different frequencies should be chosen, one in each of the following bands:

- (*a*) f_1 —0.3 to 6.0 mc
- (*b*) f_2 —6.0 to 16.0 mc
- (*c*) f_3 —16.0 to 26.0 mc

(3) The following conditions should be the same each week:

- (*a*) Frequencies
- (*b*) Mode of transmission
- (*c*) Output power (100-watt operation)
- (*d*) ANTENNA or dummy load
- (*e*) EXCITATION control @ position 180° clockwise from minimum position.

(4) For trouble-shooting procedures, refer to Section 7 of this instruction book.

(5) Include date and TOTAL HOURS-FILAMENT meter reading as indicated in space at top of table 6-5.

TABLE 6-5. RFA METER READINGS, WEEKLY RECORD

| DATE: () | TOTAL HOURS-FILAMENT: () | | |
|------------------------------------|-----------------------------|----------------|----------------|
| VOLTMETER Switch (D) Positions: | VOLTMETER | | |
| | f ₁ | f ₂ | f ₃ |
| | RF IN (5 V) | | |
| | BIAS (500 V) | | |
| | LV (500 V) | | |
| | MV (1000 V) | | |
| | PA E _{c2} (1000 V) | | |
| | PA E _b (5000 V) | | |
| IPA Switch (C) Positions: | IPA CURRENT METER | | |
| | f ₁ | f ₂ | f ₃ |
| | I _{c1} (5 MA) | | |
| | I _{c2} (10 MA) | | |
| PA Switch (H) Positions: | PA CURRENT METER | | |
| | f ₁ | f ₂ | f ₃ |
| | I _{c1} (50 MA) | | |
| | I _{c2} (100 MA) | | |
| Antenna Current Readings | ANT CURRENT METER | | |
| | f ₁ | f ₂ | f ₃ |
| | | | |

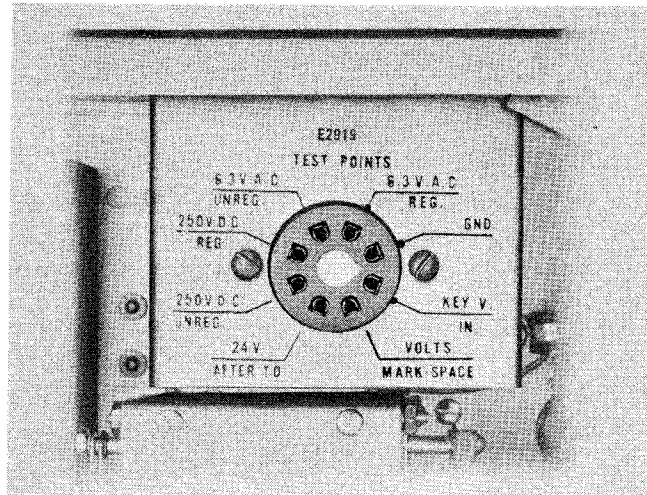


Figure 6-4. Radio Frequency Oscillator O-275/SRT (RFO), Metering Socket, E-2919

c. RFO METERING SOCKET VOLTAGES, WEEKLY RECORD.—Table 6-6 is a chart which may be used to record the RFO weekly readings at the metering socket, E-2919. (See figure 6-4.)

Observe the following:

- (1) Place equipment controls in the positions suggested in Section 5, table 5-2.
- (2) Take readings with Multimeter ME-25A/U.
- (3) For trouble-shooting procedures, refer to Section 7 of this instruction book.
- (4) Make a record of date and TOTAL HOURS-FILAMENT meter reading as indicated in space at top of table 6-6.

TABLE 6-6. RFO METERING SOCKET VOLTAGES, WEEKLY RECORD

| E-2919 PIN NO. (See figure 6-4.) | PIN DESIGNATIONS | DATE: | DATE: | DATE: |
|-------------------------------------|--------------------|-----------------------|-----------------------|-----------------------|
| | | () | () | () |
| | | TOTAL HOURS-FILAMENT: | TOTAL HOURS-FILAMENT: | TOTAL HOURS-FILAMENT: |
| | | () | () | () |
| 1 | GND. | | | |
| 2 | 6.3 V. A.C. REG. | | | |
| 3 | 6.3 V. A.C. UNREG. | | | |
| 4 | 250 V. D.C. REG. | | | |
| 5 | 250 V. D.C. UNREG. | | | |
| 6 | 24 V AFTER TD | | | |
| 7 | VOLTS MARK-SPACE | | | |
| 8 | *KEY V. IN | | | |

* Refer to table 6-8.

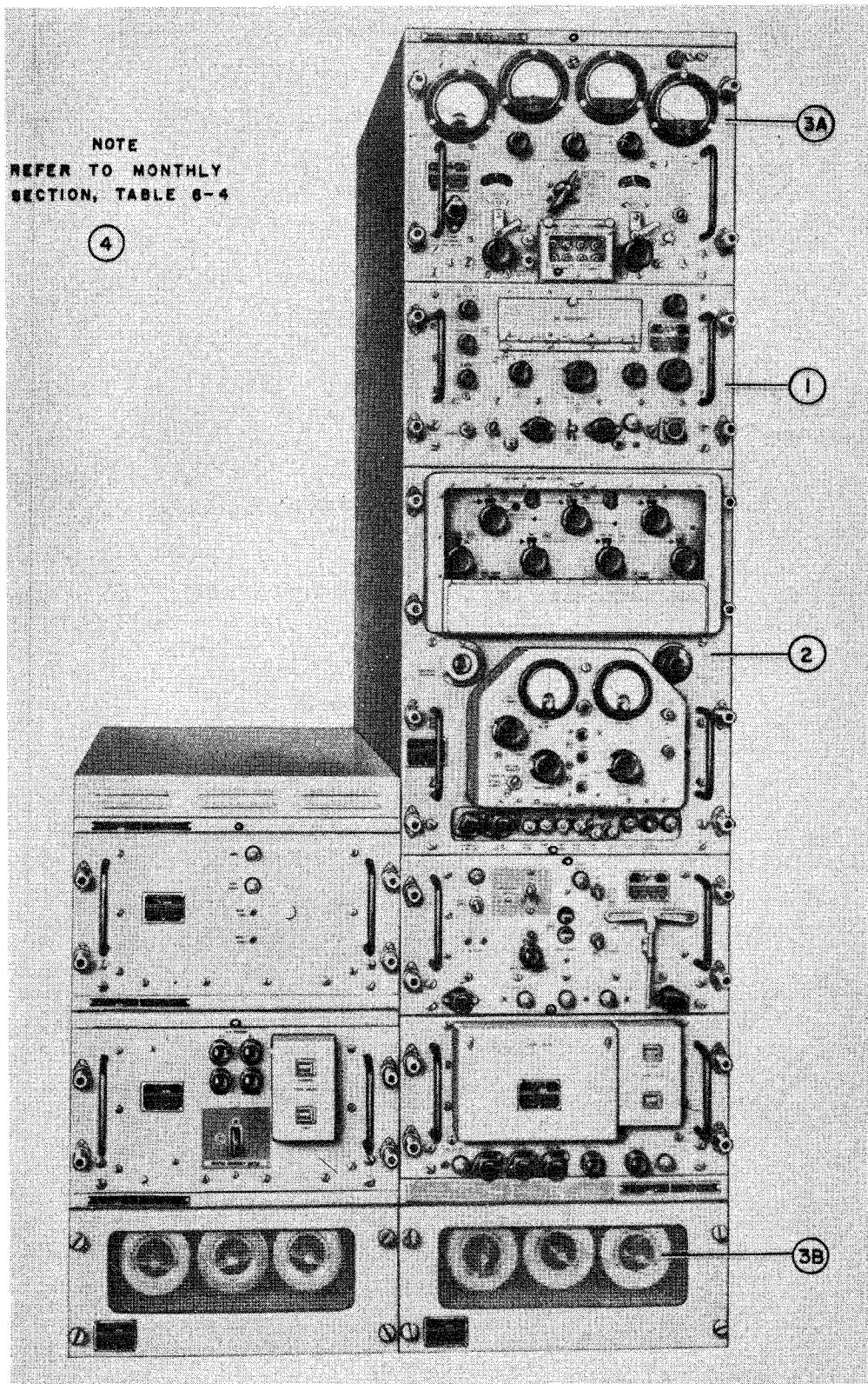


Figure 6-5. Monthly Routine Maintenance Checks, AN/SRT-15 Transmitter Bay

TABLE 6-7. FRONT PANEL TEST POINT VOLTAGES, WEEKLY RECORD

| FIGURE REFERENCE | TEST POINT | DATE: | DATE: | DATE: | DATE: |
|---------------------------|----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | | () | () | () | () |
| | | TOTAL HOURS-FILAMENT: | TOTAL HOURS-FILAMENT: | TOTAL HOURS-FILAMENT: | TOTAL HOURS-FILAMENT: |
| | | () | () | () | () |
| See 3, figure 6-3, (LLRM) | 250 V. P.S. | | | | |
| See 4, figure 6-3, (LVPS) | +250 V | | | | |
| | +300 V | | | | |
| | -220 V | | | | |
| See 5, figure 6-3, (HLRM) | *GRID #1 - V-1601 | | | | |
| | GRID #1 - V-1602 | | | | |
| See 6, figure 6-3, (MVPS) | CAUTION 500 V OUTPUT | | | | |

* 500-Watt Operation: Record TOTAL HOURS-FILAMENT reading on HVPS.

d. FRONT PANEL TEST POINT VOLTAGES, WEEKLY RECORD.—Table 6-7 is a typical chart which may be used to check the weekly front panel test point readings.

Observe the following:

- (1) Use Multimeter ME-25A/U.
- (2) For trouble shooting, refer to Section 7 of this instruction book.
- (3) Make a record of the date and the reading on the TOTAL HOURS-FILAMENT meter as indicated in the space at the top of table 6-7.

e. LLRM KEYING VOLTAGES, MONTHLY RECORD.—Table 6-8 is a form that may be used to check the monthly keying voltage readings.

Observe the following:

- (1) Place equipment controls in the positions suggested in Section 5, table 5-2.
- (2) Take readings with Multimeter ME-25A/U.
- (3) For trouble-shooting procedures, refer to Section 7 of this instruction book.

(4) Make a record of date and TOTAL HOURS-FILAMENT meter reading as indicated in space at top of table 6-8.

f. RFO UNIT TEST JACK VOLTAGES, MONTHLY RECORD.—Table 6-9 is a form that may be used to check some significant voltages in the RFO.

Observe the following:

- (1) Place the equipment controls in the positions suggested in Section 5, table 5-2.
- (2) Use Multimeter ME-25A/U.
- (3) For trouble-shooting procedures, refer to Section 7 of this instruction book.

(4) Make a record of date and TOTAL HOURS-FILAMENT reading as indicated in space at top of table 6-9.

g. RFO UNIT ADJUSTMENTS.

(1) UNIT 1.—R-F Oscillator Z-2001 (unit 1) is commonly called the crystal oscillator. It contains an oven-controlled 100-kc crystal. For purposes of this section, unit 1 has one routine check and adjustment (see figure 6-10).

TABLE 6-8. LLRM KEYING VOLTAGES, MONTHLY RECORD

| METERING SOCKET (See figure 6-4.) | SERVICE SELECTOR SWITCH ① | NOMINAL VOLTAGES | DATE: | DATE: | DATE: |
|--------------------------------------|---------------------------|------------------|-----------------------|-----------------------|-----------------------|
| | | | () | () | () |
| | | | TOTAL HOURS-FILAMENT: | TOTAL HOURS-FILAMENT: | TOTAL HOURS-FILAMENT: |
| | | | () | () | () |
| E-2919, Pin 8 to GND. (Key V. IN) | HAND | (-)17.5 V | | | |
| | MACH | (-)17.5 V | | | |
| | FSK | (-)30 V | | | |
| | FAX | (-)30 V | | | |
| | PHONE | (-)17.5 V | | | |

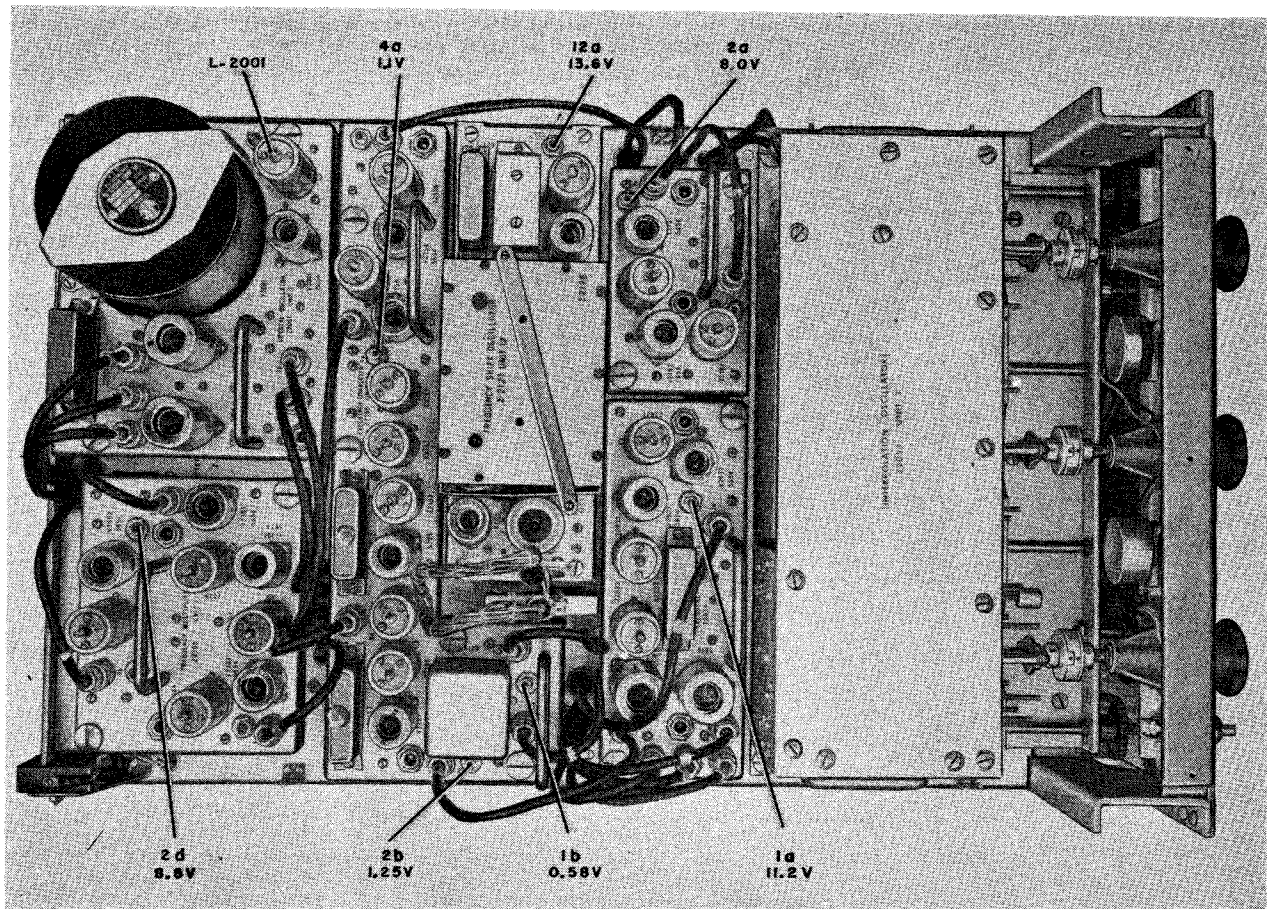


Figure 6-6. RFO, Top View, Unit Test Jacks, Voltages

Step 1. Tune suitable receiver (RBA, RBB, RBC series or equivalent) to 2.5 mc. Keep RFO turned off at this time.

Step 2. Place transmitter in stand-by for at least one hour to allow crystal ovens to stabilize.

Step 3. Connect "T" type of BNC connector to 100 KC X-TAL test jack and couple output of one arm directly to receiver input.

Note

The output of 100 KC X-TAL test jack is 100 kc at all times, regardless of setting of frequency knobs.

Step 4. Connect ship receiving antenna to other arm of "T" connector. Use variable attenuator in series with this signal to reduce it to level of the 25th harmonic of 100-kc crystal.

Step 5. Adjust L-2001 on unit 1 for zero beat. (See figure 6-7 for location of L-2001.) Rotate L-2001 clockwise until beat is heard, then counterclockwise through null until beat is heard again.

Step 6. Set L-2001 at midposition between two beats, which will then be the center of the null.

Note

Zero beat these signals only when WWV is not modulating, to avoid false beats.

Step 7. Carefully observe meter. At high beat frequencies, the indicator will not respond and will seemingly remain at a null. However, as the zero beat is more closely approached, the meter indicator will begin to oscillate rapidly. In continuing towards zero beat, these oscillations will become slower and slower, until, finally, at zero beat, the pointer will come to rest.

Note

This procedure may be used after replacement of V-2001 in unit 1.

(2) UNIT 3.—R-F Oscillator Z-2053 (unit 3) is commonly called the interpolation oscillator. For purposes of this section, unit 3 requires one routine check and adjustment—the 100-kc adjustment (see figure 6-10).

Step 1. Turn the KC knob Ⓢ to 9; the 100 knob Ⓢ to 9, the 10 knob Ⓢ to 10.

TABLE 6-9. RFO UNIT TEST JACK VOLTAGES, MONTHLY RECORD

| ILLUSTRATION REFERENCE | RFO UNIT | TEST JACK | NOMINAL VOLTAGE (AC) | TOTAL HOURS-FILAMENT: | TOTAL HOURS-FILAMENT: | TOTAL HOURS-FILAMENT: | TOTAL HOURS-FILAMENT: |
|--------------------------------------|----------|--------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | | | | () | () | () | () |
| | | | | DATE: | DATE: | DATE: | DATE: |
| | | | | () | () | () | () |
| RFO, Top View (See figure 6-6.) | 2 | 1a | 11.2 | | | | |
| | 5 | 1b | 0.58 | | | | |
| | | 2b | 1.25 | | | | |
| | 7 | 2d | 8.8 | | | | |
| | 4 | 2a | 8.0 | | | | |
| | 12 | 12a | 13.6 | | | | |
| | 5 | 4a | 1.1 | | | | |
| RFO, Right Side (See figure 6-7.) | 3 | 3a | 0.28 | | | | |
| | 11B | 10b | 0.35 | | | | |
| | | 9b | 1.40 | | | | |
| | 11C | 9c | 1.20 | | | | |
| | | 10c | 0.35 | | | | |
| | 6 | 1c | 6.45 | | | | |
| | | 2c | 1.25 | | | | |
| 5a | | 1.17 | | | | | |
| RFO, Left Side (See figure 6-8.) | 8 | 1d | 11.10 | | | | |
| | | 6b | 1.00 | | | | |
| | | 7a | 1.20 | | | | |
| | 9 | 7b | 1.90 | | | | |
| | | 8b | 0.90 | | | | |
| 10 | 2e | 8.80 | | | | | |
| RFO, Bottom View (See figure 6-9.) | 11A | 9a | 1.40 | | | | |
| | | 10a | 0.47 | | | | |
| RFO, Front Panel (See figure 6-10.) | 14 | 100 KC X-TAL | 1.00 | | | | |
| | | 100 KC STEP | 0.8 | | | | |

Note

At this setting, the output of unit 3 will be 100 kc, available at INT. OSC. test jack on the front panel of the RFO.

Step 2. Place ZERO ADJ. toggle switch ② in INT. OSC. position.

CAUTION

Do not confuse this switch with the ZERO ADJ. controls behind the access door.

Step 3. Place the output of INT. OSC. test jack on vertical plates of Oscilloscope OS-8/U.

Step 4. Place output of 100 KC X-TAL test jack on horizontal plates of scope. Trim scope controls for equal amplitudes on scope screen. A steady 1:1 ratio pattern should be seen.

Step 5. Open the access door on the front of the RFO and adjust the control marked INT. OSC.—ZERO ADJ. to obtain a correct 1:1 Lissajous pattern, if necessary. (See figure 6-10 for location of this control.)

Note

This procedure may be used after replacement of V-2051 in unit 3.

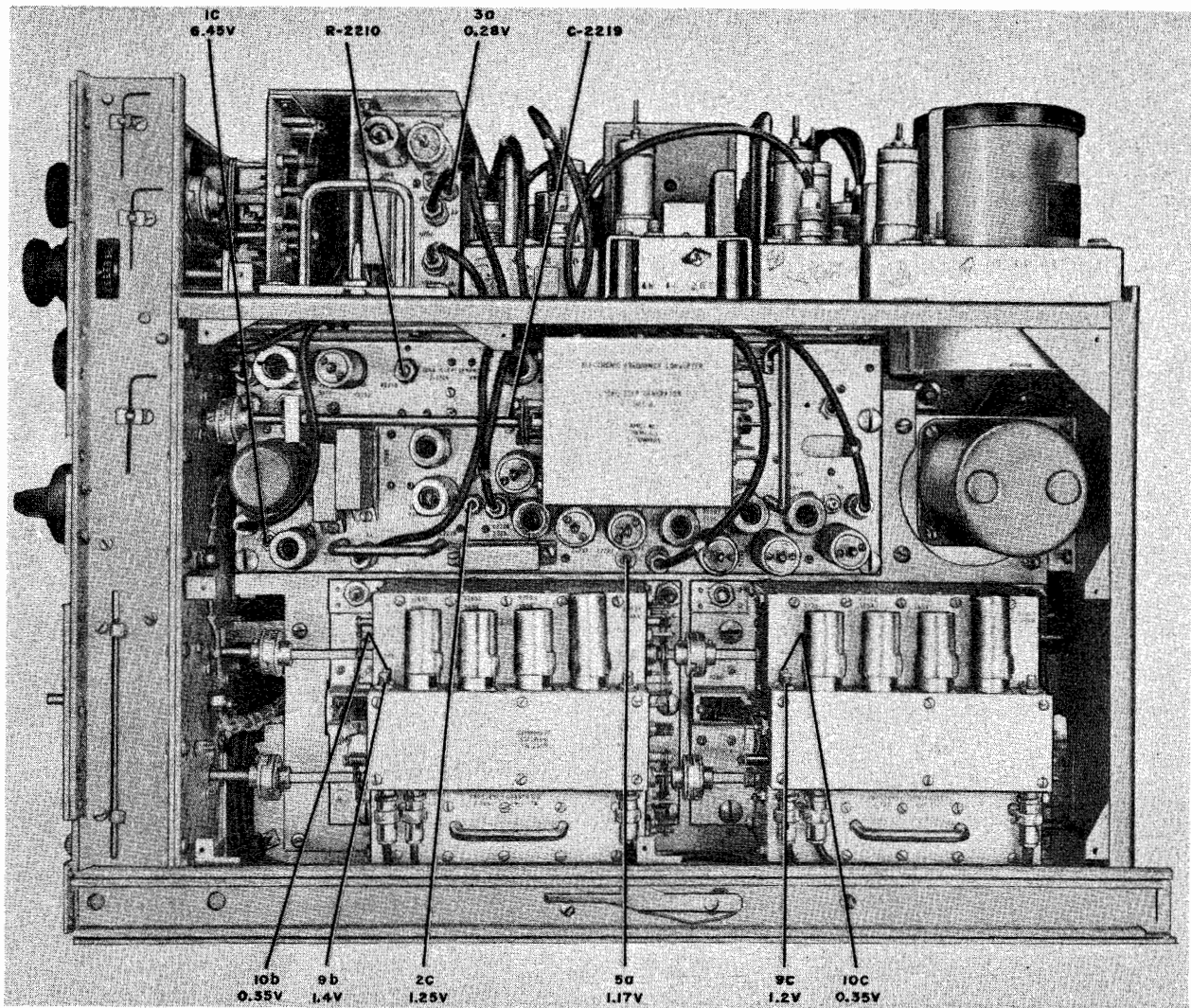


Figure 6-7. RFO, Right Side, Unit Test Jacks, Voltages

(3) UNIT 6.—Electron Frequency Converter Z-2204 (unit 6) is commonly called the 10-kc step generator. For purposes of this section, unit 6 requires two routine checks and adjustments.

(a) 10-KC ADJUSTMENT.
(See figure 6-10.)

Step 1. Connect the output of the 10-kc test jack to the vertical plates of Oscilloscope OS-8/U.

Note

The output of the 10 KC test jack is 10 kc, regardless of the setting of the frequency knobs.

Step 2. Place the output of the 100 KC X-TAL test jack on the horizontal plates of the scope. A 10:1 Lissajous pattern will be seen if the 10-kc step generator is properly adjusted.

Step 3. Adjust R-2210 (see figure 6-7 for location of R-2210) for proper Lissajous pattern, if necessary, as follows:

Note

R-2210 may be adjusted without removing unit 6 from its mounting. Unit 1 must be properly aligned before adjusting R-2210.

Step a. Place the equipment in stand-by condition, switch $\text{\textcircled{P}}$ in STANDBY.

Step b. Connect a cable to jack 10 KC on the front panel of the RFO to the vertical input of Oscilloscope OS-8A/U (or equivalent).

Step c. Connect a cable to jack 100 KC X-TAL on the RFO front panel to the horizontal input of the oscilloscope.

Step d. Loosen locknut and set R-2210 completely counterclockwise, and then turn it clockwise until the 10-kc blocking oscillator "locks-in" (i.e., until a 10:1 Lissajous pattern appears on the CRT; refer to figure 7-2).

Step e. Note the position of R-2210 shaft.

Step f. Set R-2210 completely clockwise, and then turn it counterclockwise until the 10-kc blocking oscillator again "locks-in" at a 10:1 frequency ratio.

Step g. Again, note the position of R-2210 shaft.

Step b. Center shaft of R-2210 between the positions noted in steps 5 and 7.

Note

This procedure may be used after replacement of V-2202 in unit 6.

(b) 300-KC ADJUSTMENT.
 (See figure 6-10.)

Step 1. Place 10 KC knob $\text{\textcircled{J}}$ in position 9.

Note

At this setting the output of the 10 KC STEP test jack will be 300 kc.

Step 2. Connect the output of the 10 KC STEP test jack to vertical plates of Oscilloscope OS-8/U.

Step 3. Place the output of the 100 KC X-TAL test jack on the horizontal plates of the scope. A steady 3:1 Lissajous pattern will be seen if the 10-kc step generator is properly adjusted.

Step 4. Disconnect the cable to the 100 KC X-TAL jack on the RFO front panel. Connect this cable to the 10 KC jack on the RFO front panel. Check positions 0-8 of the 10-kc step switch for correct Lissajous pattern count as indicated in table 6-10.

Step 5. Adjust C-2219 (see figure 6-7 for location of C-2219) for correct Lissajous pattern, if necessary, as follows:

Note

C-2219 may be adjusted without removing unit 6 from mounting by pulling RFO drawer out.

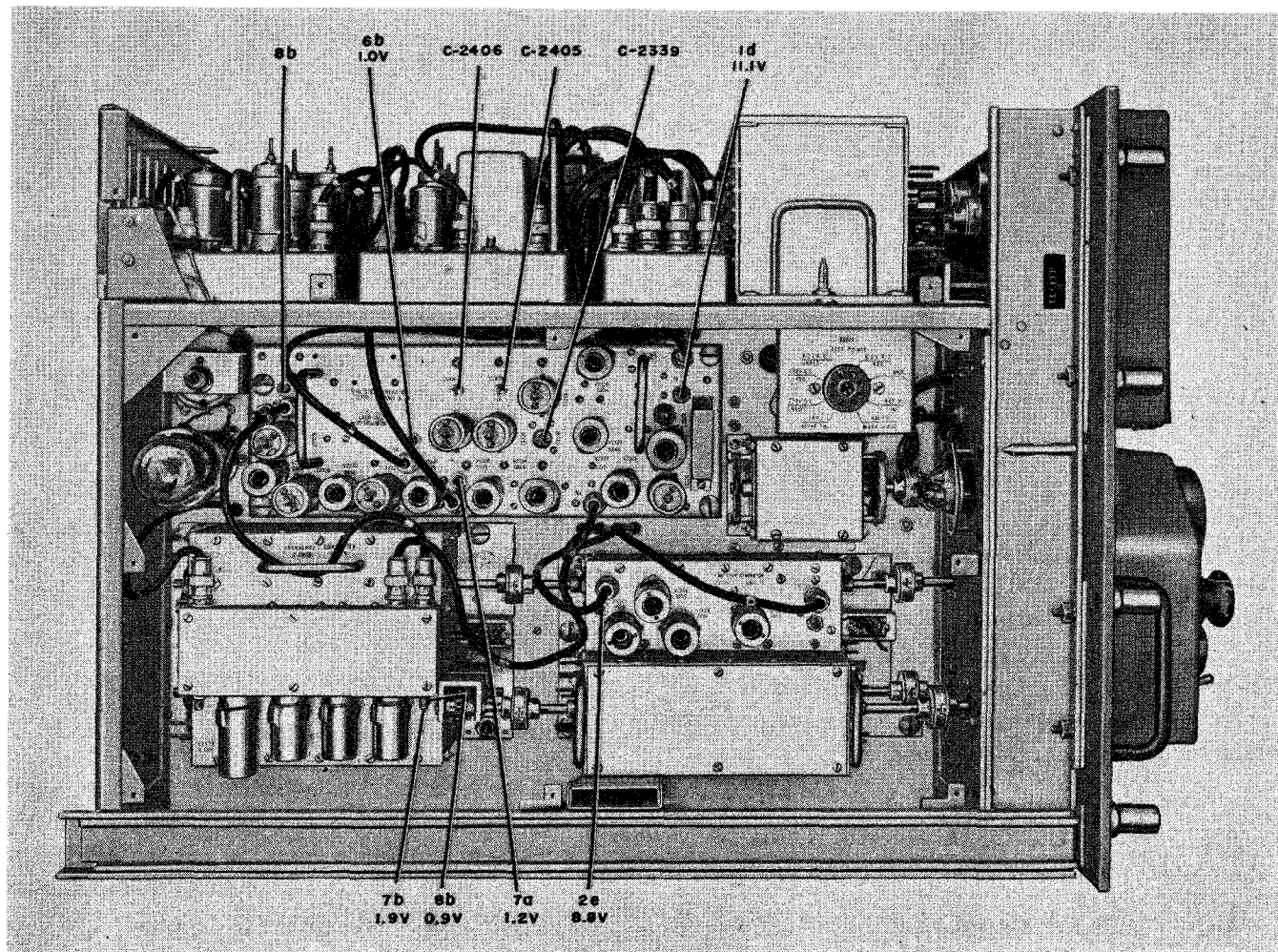


Figure 6-8. RFO, Left Side, Unit Test Jacks, Voltages

TABLE 6-10. UNIT 6 10-KC STEP OSCILLATOR CHECK

| POSITION OF S-2201 | LISSAJOUS PATTERN |
|--------------------|-------------------|
| 8 | 29:1 |
| 7 | 28:1 |
| 6 | 27:1 |
| 5 | 26:1 |
| 4 | 25:1 |
| 3 | 24:1 |
| 2 | 23:1 |
| 1 | 22:1 |
| 0 | 21:1 |

Units 1, 2, 3, 4, 5 and R-2210 must be properly aligned before making this adjustment.

Step a. Place equipment in stand-by condition, switch (P) in STANDBY.

Step b. Place knob (J) at 9. (Position of other knobs is immaterial.)

Step c. Connect a cable from the 100 KC X-TAL jack on the RFO front panel to the horizontal input of an oscilloscope (OS-8A/U or equivalent).

Step d. Connect a cable from 10 KC STEP jack on RFO front panel to the vertical input of the oscilloscope.

Step e. Turn C-2219 clockwise until the oscillator unlocks, then turn slowly counterclockwise until the oscillator locks at the Lissajous pattern of 3:1. Note the position of the adjustment slot.

Step f. Turn C-2219 counterclockwise until oscillator unlocks, then turn slowly clockwise until the oscillator locks at the Lissajous pattern of 3:1. Note the position of the adjustment slot. Set the slot at the mid-range point of the "lock-in" range

Note

This procedure may be used after replacement of any or all of the following unit 6 tubes:

1. V-2203
2. V-2204
3. V-2205

(4) UNIT 8.—Electron Frequency Converter Z-2330 (unit 8) is commonly called the 100-kc step generator. For purposes of this section, unit 8 requires two routine checks and adjustments.

(a) 100-KC ADJUSTMENT.
(See figure 6-10.)

Step 1. Set 100 KC knob (H) in position 9.

Step 2. Place the output of the 100 KC STEP test jack on the vertical plates of the Oscilloscope OS-8/U.

Note

At this setting the output of the 100 KC STEP test jack will be 2.5 mc.

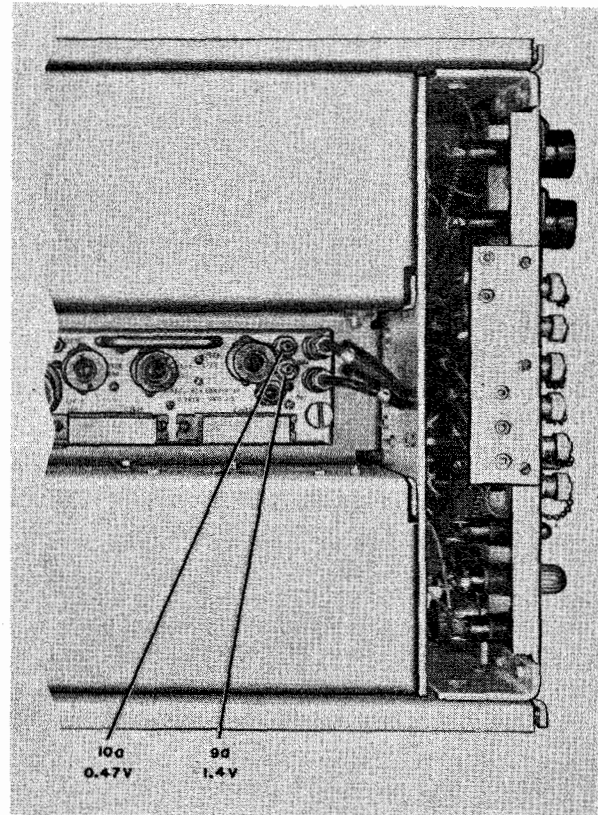


Figure 6-9. RFO, Bottom View, Unit Test Jacks, Voltages

Step 3. Place this output of the 100 KC X-TAL jack on the horizontal plates of the scope. A Lissajous pattern with a ratio of 1:25 will be seen. Check positions 0-8 of the 100-kc step switch for correct Lissajous pattern count as indicated in table 6-11.

TABLE 6-11. UNIT 8 100-KC STEP OSCILLATOR CHECK

| POSITION OF (H) POINTER | LISSAJOUS PATTERN |
|-------------------------|-------------------|
| 8 | 24:1 |
| 7 | 23:1 |
| 6 | 22:1 |
| 5 | 21:1 |
| 4 | 20:1 |
| 3 | 19:1 |
| 2 | 18:1 |
| 1 | 17:1 |
| 0 | 16:1 |

Step 4. Adjust C-2339 (see figure 6-8 for location of C-2339), if necessary, to obtain a steady pattern as follows:

Note

C-2339 may be adjusted without removing unit 8 from the mounting, by pulling the RFO

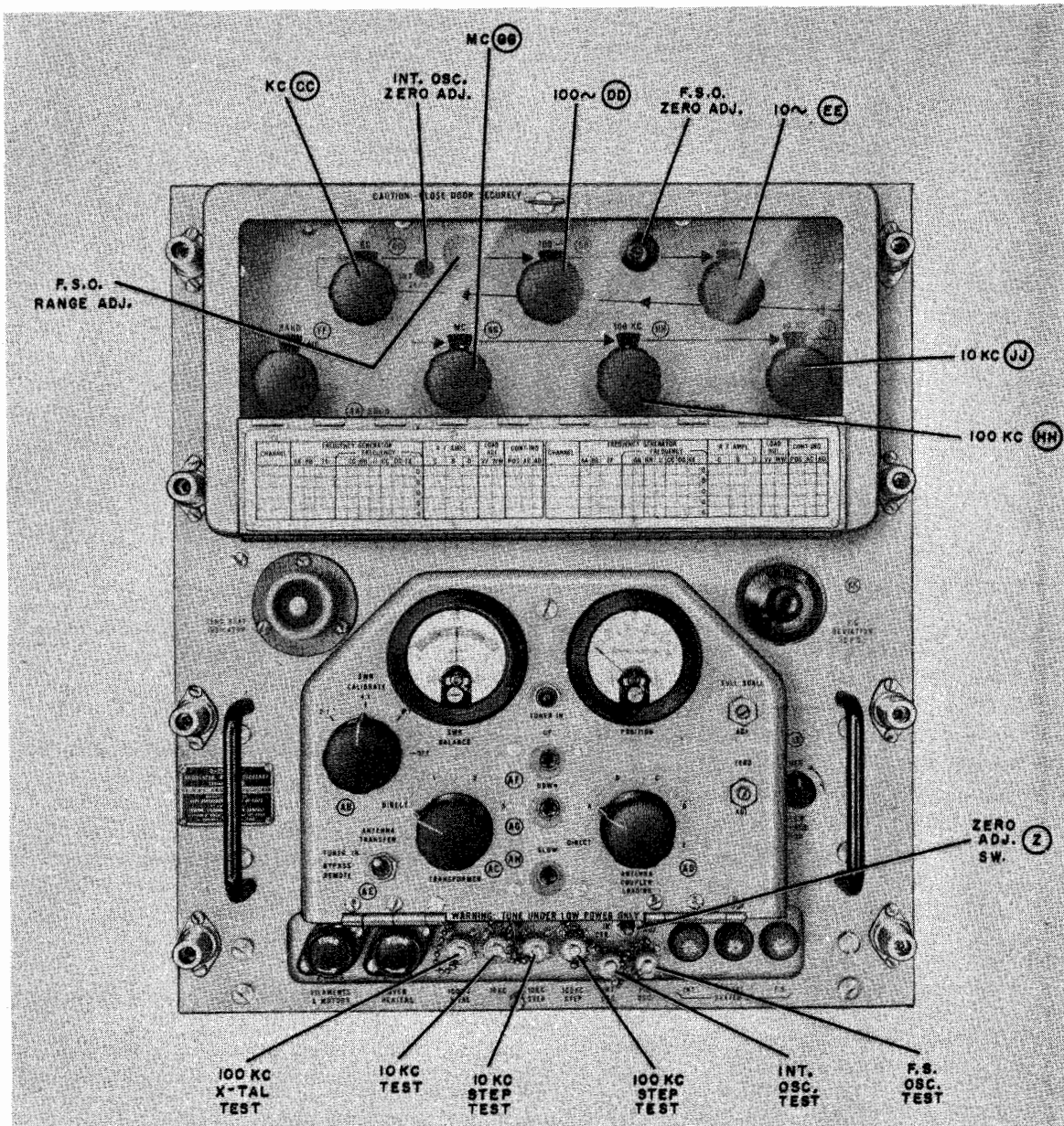


Figure 6-10. RFO, Front Panel Unit Adjustments

drawer out and removing its left side cover. Units 1, 2, 3, 4, 5, 6 and 7 must be properly aligned before making this adjustment.

Step a. Switch (PP) in STANDBY. Frequency selection knob as follows: (HH) at position 9. (The position of other knobs immaterial.)

Step b. Connect a cable from the 100 KC X-TAL jack on the RFO front panel to the horizontal input of an oscilloscope (OS-8A/U or equivalent).

Step c. Connect a cable from the 100 KC jack on the RFO front panel to the vertical input of the oscilloscope.

Step d. Turn C-2339 clockwise until the oscillator unlocks, then turn slowly counterclockwise until the oscillator locks at the Lissajous pattern of 25:1. Note position of adjustment slot.

Step e. Turn C-2339 counterclockwise until the oscillator unlocks, then turn slowly clockwise until the oscillator locks at the Lissajous pattern of 25:1. Note position of adjustment slot. Set slot at the midrange point of the "lock-in" range.

Note

This procedure may be used after replacement of any or all of the following:

1. V-2327
2. V-2328
3. V-2329

(b) MAXIMUM AMPLITUDE ADJUSTMENT.
(See figure 6-10.)

Step 1. Turn the 100 KC knob $\text{\textcircled{H}}$ to position 9.

Step 2. Connect Multimeter ME-25A/U to test point 8b on unit 8. (See figure 6-8 for location of test point 8b. Use test jack marked 8b on unit 8, not the one on unit 9.)

Step 3. Adjust C-2405 and C-2406 for a maximum reading on the meter. (See figure 6-8 for location of C-2405 and C-2406.)

Note

This procedure may be used for unit 8 after replacement of the following tubes:

1. V-2330
2. V-2331

(5) UNIT 12.—R-F Oscillator Z-2127 (unit 12) is commonly called the frequency shift oscillator (FSO). For purposes of this section, unit 12 requires one routine check and adjustment—the 100-kc adjustment (see figure 6-10).

The output of the frequency shift oscillator is 100 kc when no frequency shift or facsimile signal is present. Be sure that the F. S. DEVIATION control $\text{\textcircled{K}}$ is at the 0 position. This output is taken at the F. S. OSC. test jack.

Step 1. Place ZERO ADJ. switch $\text{\textcircled{2}}$ in the F. S. OSC. position.

CAUTION

Do not confuse the ZERO ADJ. switch $\text{\textcircled{2}}$ with the ZERO ADJ. controls behind the access door on the RFO front panel.

Step 2. Connect the output of the F. S. OSC. test jack to the vertical plates of Oscilloscope OS-8/U. A steady 1:1 Lissajous pattern should be seen.

Step 3. Adjust the F.S.O ZERO ADJ. control for the steady 1:1 pattern, if necessary.

Note

This procedure may be used after replacement of any or all of the following tubes:

1. V-2126
2. V-2127
3. V-2128

5. MAINTENANCE PROCEDURES.

a. DISASSEMBLY.—Section 7 of this instruction book describes major disassembly procedures. Obvious disassembly or dismantling sequences will not be specially treated, but will be left to the discretion of technical personnel.

b. CLEANING AND INSPECTION.—As a preliminary to cleaning and inspecting, it is advisable to remove all the plug-in components and other parts which may be removed without unsoldering any of the wires. These parts include such items as tubes, crystals, and pilot lamps. This work should be done unit by unit to avoid a mix-up of the various parts removed. Some of the tubes, of course, will require loosening of clamps and tube shields.

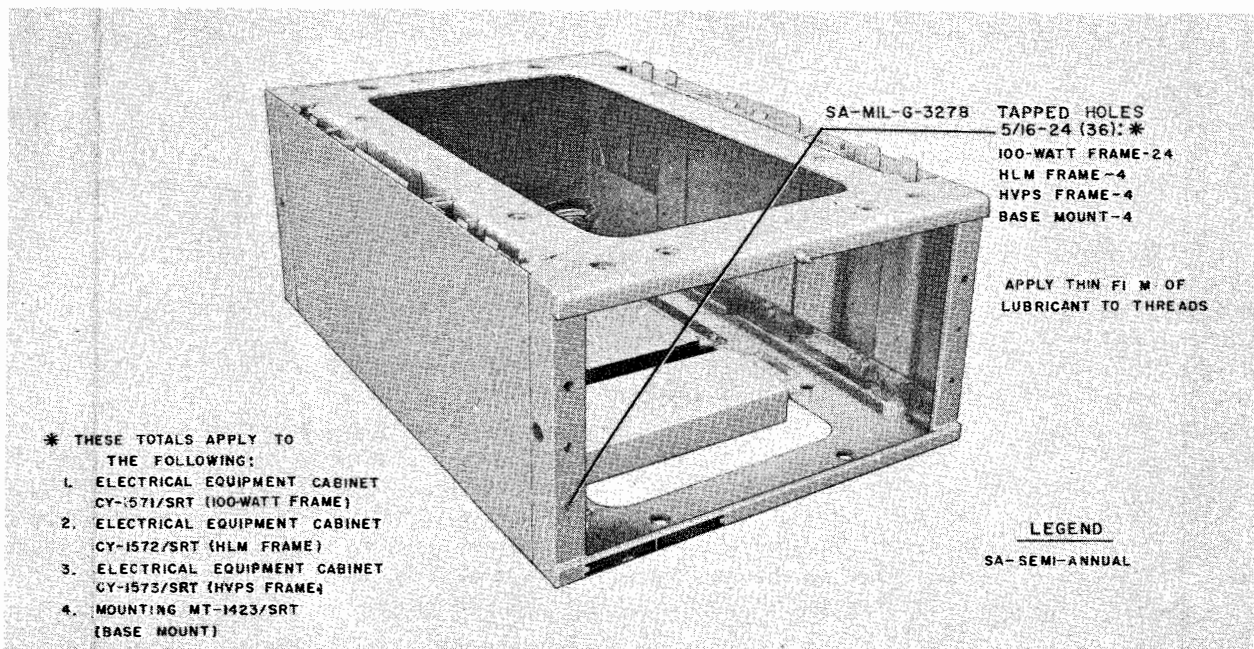


Figure 6-11. Electrical Equipment Cabinet and Base Mount Tapped Holes, Lubrication

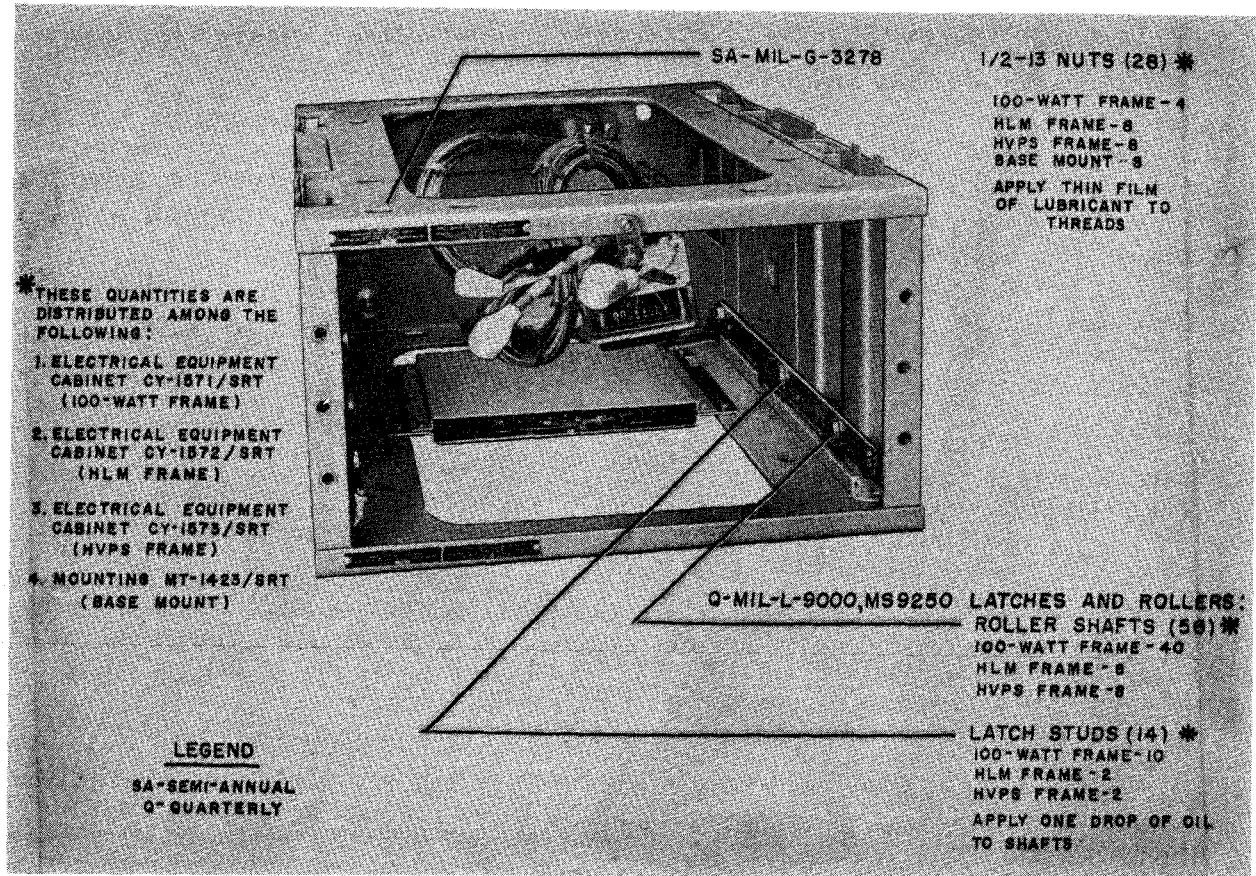


Figure 6-12. Electrical Equipment Cabinet and Base Mount Latches, Rollers and Nuts, Lubrication

Check for unusual odors, such as potting compound, which might indicate an overloaded transformer; burning paint—overheated resistors; burning rubber—defective insulation.

An air hose may be used to remove dust, dirt, and foreign particles. Be sure to use extreme care when using the air hose around delicate parts, such as tuning capacitors. As a precautionary measure, the air line is purged of moisture by directing the nozzle towards the floor and releasing the air in the line.

A rag or brush dipped in dry-cleaning solvent (refer to paragraph 5b) will remove dirt or grease. When used as a spray, use solvent sparingly. Ball bearings and other small parts may be dipped in the solvent and brushed to loosen any grease residue. They may then be air-dried by spinning.

Do not disturb the layout of the wiring, if possible. If wiring must be removed, however, be sure to return it to its original position after the cleaning procedure to prevent oscillation, feedback, and other circuit disturbances. Check all the sockets, and remove any dirt or corrosion with solvent or with fine sandpaper or crocus cloth.

After cleaning, the equipment is inspected for faulty or damaged parts. Some of these parts include tube

sockets and contacts, springs, gears, tuning capacitors, potentiometers, bandswitches, insulators, terminal strips, jacks, plugs, and hinges. Check for and replace or secure loose or damaged hardware.

The operating controls should be given a careful visual inspection and then checked for correct operation and setting. Turn each control slowly to its maximum clockwise limit, then to its maximum counterclockwise limit. Binding or scraping should be noted and referred to the proper department for correction, if it involves more than a simple adjustment.

In gear assemblies and in tuning mechanisms, backlash must be held to a minimum. Hence, trouble of this sort should be noted and corrected or reported as soon as possible.

Replace damaged parts, such as shorted or leaky capacitors or burned-out resistors. However, before actual replacement of the damaged part, the circuit should be carefully inspected to find the cause of the trouble. Only in extreme emergencies should replacement be made without a check-up.

The plug-in parts which had been previously removed must be cleaned and inspected before replacing. Dirt and grease may be removed with dry-cleaning solvent (paragraph 5b).

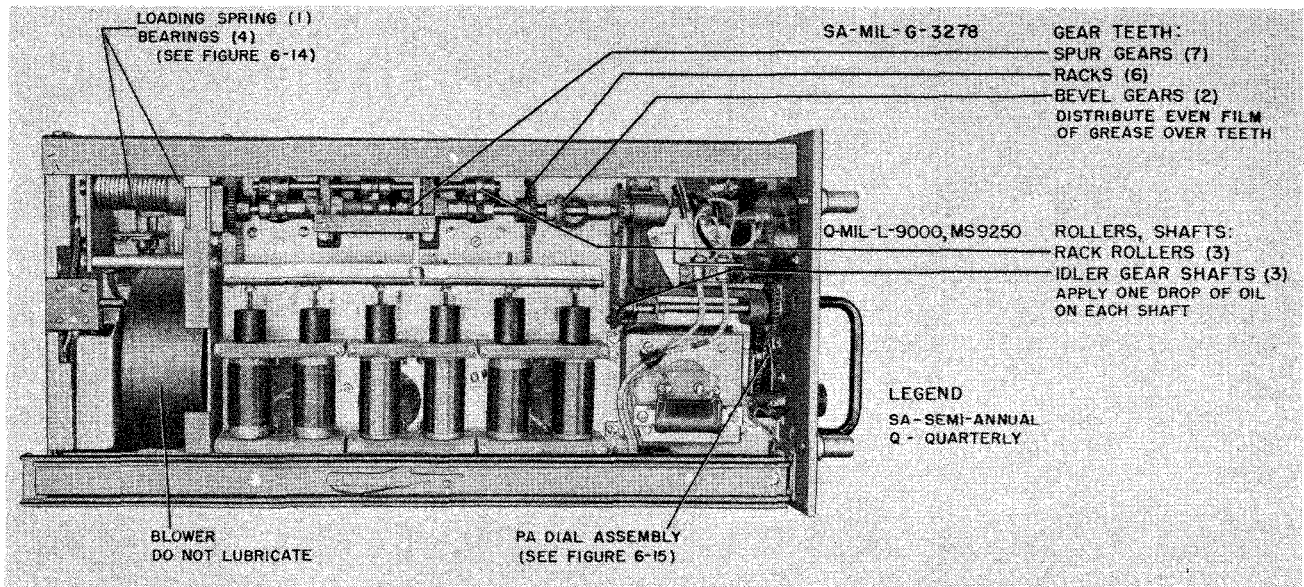


Figure 6-13. Radio Frequency Amplifier AM-1008/SRT (RFA), Left Side, Lubrication

Note

It is important to remove dirt or corrosion on the prongs of plug-in parts, such as tubes, jacks, and plugs, to avoid a high resistance connection between the prong and its socket. Use crocus cloth or fine sandpaper.

Tubes are to be tested in a tube checker before replacing. Cables and cords and their jacks and plugs must be checked for damage to their inserts and insulation. Look for opens, shorts, and intermittent contacts. The latter may often be found by wiggling the plugs in their sockets. If damage is found or if trouble is suspected, use an ohmmeter to check for continuity in the cords and cables.

c. LUBRICATION PROCEDURES.—The lubricants described in table 6-12, Lubricating Greases, and table 6-13, Lubricating Oils, are to be used on this equipment. It is recommended that certain tools be used for lubricating purposes (refer to table 6-14, Lubricating Tools). A small oil can is particularly convenient in most applications. For the more inaccessible points, the lubricant may be applied on the end of a long rod. The latter method is useful for one-drop applications, such as required at shaft-ends. Grease may be applied by hand or with a small paddle or rag. A small brush may be used, if convenient.

When dispensing a lubricant, wipe all dirt, dust, or moisture from around the opening of the container. The containers must be kept closed when not in use, to prevent moisture condensation on the surface of the lubricant and to keep dust and dirt out of the container. It is extremely important that lubricants be kept free of foreign matter.

Note

Many of the bearings used in the equipment are made of oil-impregnated bronze and require no lubrication; hence, in certain cases, no lubrication information will be needed.

Lubricants are effective in reducing friction, but it must be borne in mind that the effects of overlubrication are almost as serious as those of poor lubrication. Too much lubricant in ball and roller bearings prevents efficient operation and may cause a good deal of harm from the pressure which is built up in the bearings as they become warm.

An excess will cause an overflow of the lubricant onto the machine. The overflow not only collects harmful dirt and grit, but necessitates more cleaning time.

In some equipments, break-downs have been traced to overlubrication. The oil tends to destroy electric insulation. Careless handling of the lubricant can result in dirt being carried into bearings with the lubricant.

Under certain conditions, it is possible that the lubrication directions may seem inadequate, while under other circumstances they may seem excessive. Personal observation under working conditions must decide this important factor. The period of the lubrication procedure may then be changed and written into the routine maintenance checks.

(1) FRAMES AND BASE MOUNTS.— Figures 6-11 and 6-12 refer to the lubrication procedures that are used on the equipment frames. The various tapped holes, nuts, latches, and rollers are shown, with references to the lubricants to be used.

(2) RADIO FREQUENCY AMPLIFIER AM-1008/SRT (RFA).

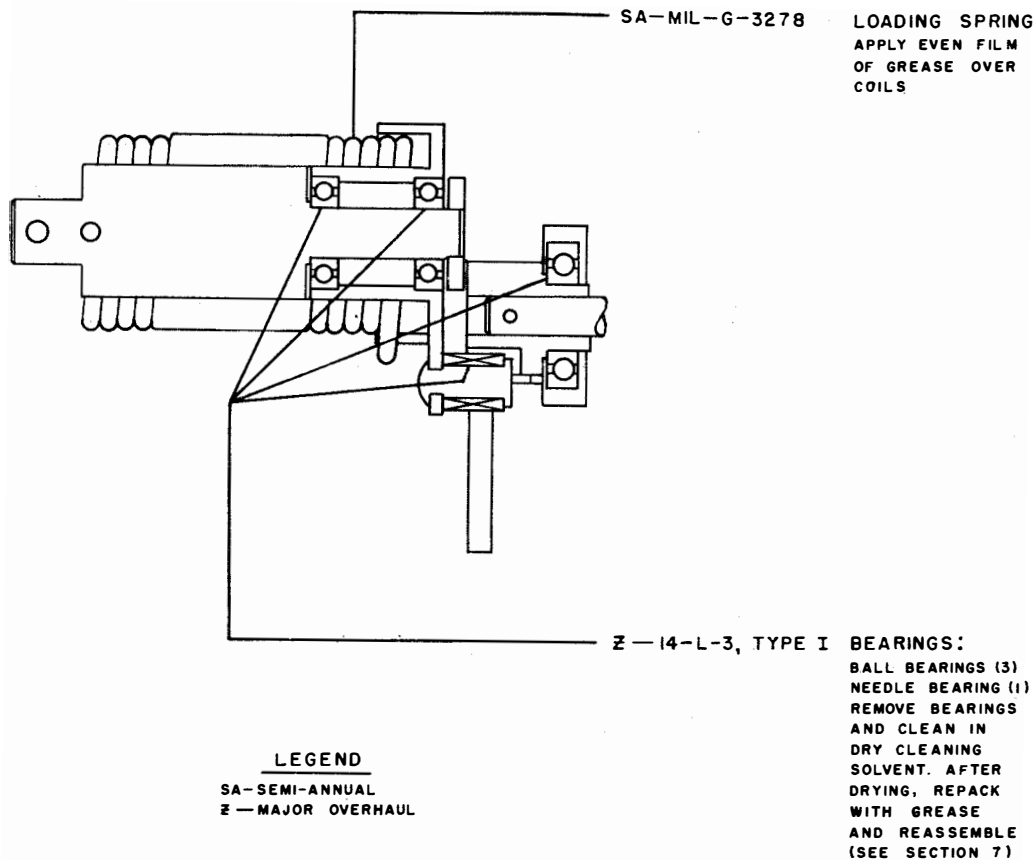


Figure 6-14. RFA, Loading Spring and Actuating Arm, Lubrication

(a) PA TUNING MECHANISM (RFA).—The left side of the radio frequency amplifier is shown in figure 6-13. The lubrication procedures for the gears, racks, rollers, and idlers used in this assembly are described. References to the loading spring, blower, and PA dial assembly are also included. As noted in figure 6-14, the bearings in the actuating arm assembly need to be serviced only at the time of a major overhaul. Section 7 describes the pertinent disassembly procedure.

(b) PA DIAL ASSEMBLY.—The PA dial assembly is shown in figure 6-15 as a line drawing which calls out the necessary lubrication points.

(c) BANDSWITCH MECHANISM (RFA).—A portion of the right side of the RFA is shown in figure 6-16. This illustration describes the procedure used to lubricate the detent roller, arm shaft, and idler. Reference to the IPA dial drive is also made.

(d) IPA DIAL ASSEMBLY. — Figure 6-17 shows the lubrication points on the IPA dial assembly.

(3) RADIO FREQUENCY OSCILLATOR
O-275/SRT (RFO).

(a) TYPICAL UNIT LUBRICATING POINTS.
—Certain parts of the RFO are shown in detail in figure 6-18 to clarify subsequent unit lubrication procedures.

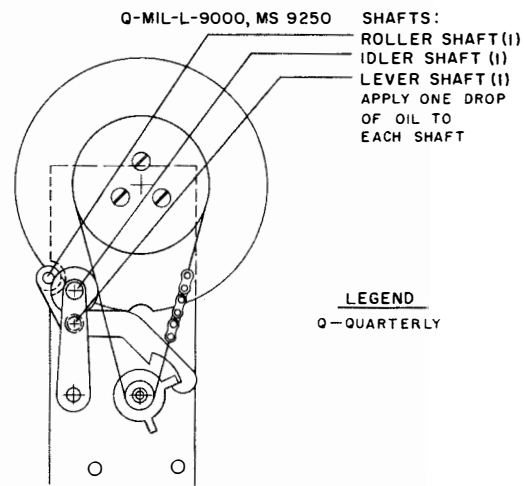


Figure 6-15. RFA, PA Dial Assembly, Lubrication

(b) LEFT SIDE.—Figure 6-19 shows the left side of the RFO and brings out the lubricating points in unit 9, unit 10, and S-2998. Reference to unit 8 is also included here.

(c) UNIT 8.—A partially disassembled unit 8 is shown in figure 6-20 to direct attention to the lubrication points.

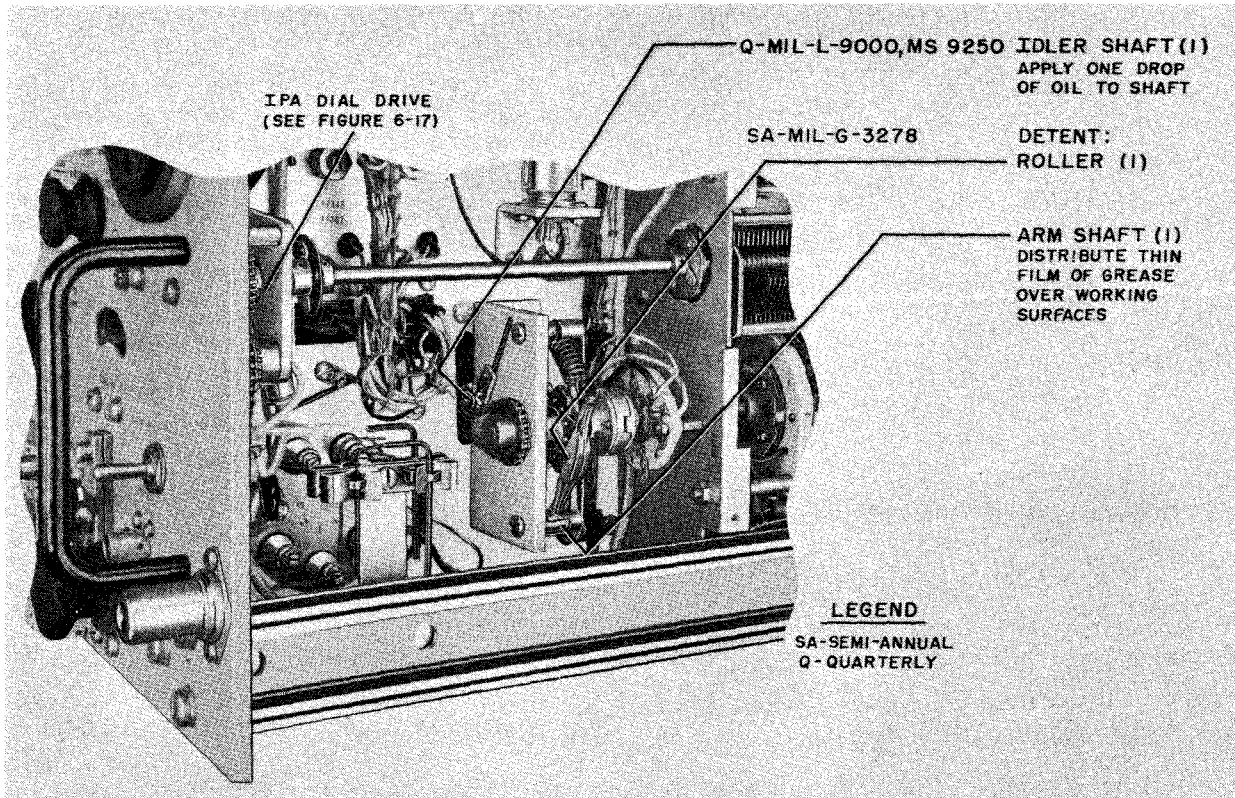


Figure 6-16. RFA, Right Side, Bandswitch Lubrication

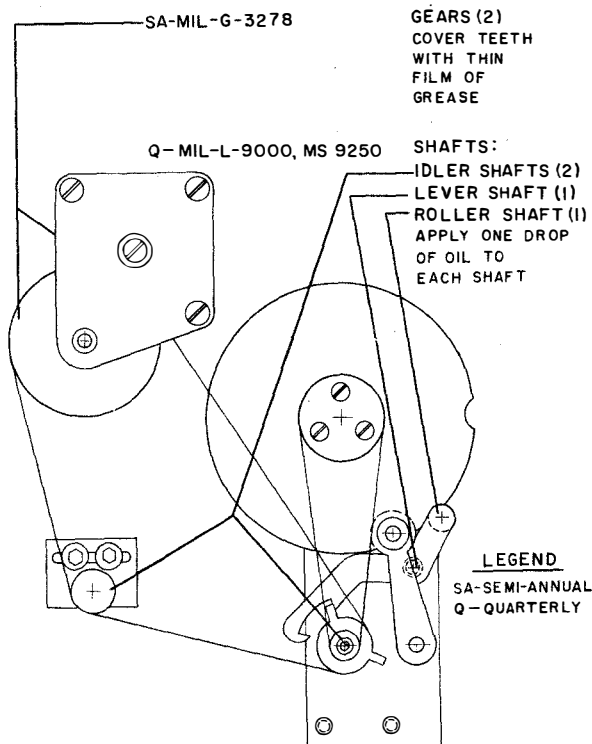


Figure 6-17. RFA, IPA Dial Assembly, Lubrication

1. UNIT 8 REMOVAL PROCEDURE.—To remove unit 8 from the RFO, proceed as follows:

- Step 1. Place the 100 KC knob \oplus in its 0 position. (See figure 6-10 for location of 100 KC knob.)
- Step 2. Disconnect all cables to unit 8.
- Step 3. Loosen the four mounting studs.
- Step 4. Carefully pull unit 8 straight out.

2. UNIT 8 REPLACEMENT PROCEDURE.—To replace unit 8:

- Step 1. Place 100 KC knob \oplus at 0. (See figure 6-10.)
- Step 2. Place the red indicator stud on unit 8 detent at 0. (See figure 6-20 for location of unit 8 detent.)
- Step 3. Carefully place unit 8 in position in the RFO.
- Step 4. Secure the four mounting studs.
- Step 5. Replace unit 8 cables.

(d) CONTROL PANEL REMOVED. — The chains and gears are shown in figure 6-21, a view of the RFO with its front panel removed. Lubrication of the fixed and adjustable idler gears is included in this illustration.

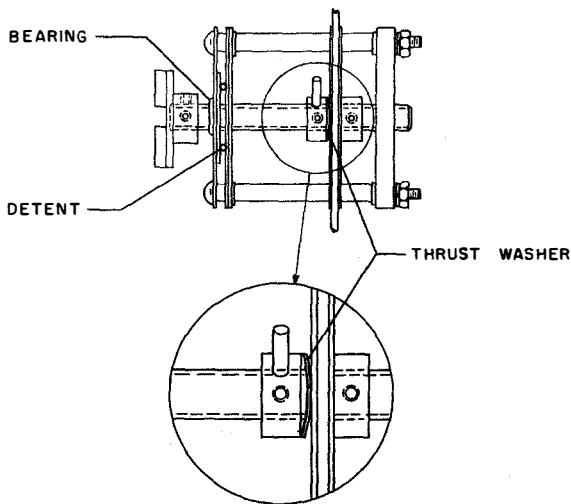


Figure 6-18. Typical Lubrication Points in the RFO

(e) RIGHT SIDE.—In figure 6-22 the right side of the RFO is shown, with the lubrication points on unit 6, unit 11B, and unit 11C pointed out. Reference to unit 3 is included in this illustration.

(f) UNIT 3.—Lubricating points in unit 3 are shown in figure 6-23, a partially disassembled view of the unit.

(4) RADIO MODULATOR MD-229/SRT (LLRM).—The location of the front panel switches and their lubrication are shown in figure 6-24, a view behind the front panel of the LLRM.

(5) MOUNTING MT-1423/SRT (BASE MOUNT).—The air filters in the base mounts must be removed for cleaning and relubricating. Figure 6-25 describes the procedure to be used.

(6) CONTROL-INDICATOR C-1352/SRT.—For lubrication of the control-indicator positioning studs and insert threads see figure 6-26.

(7) CHASSIS SLIDES.—Figure 6-27 refers to the lubrication of the chassis slides. As noted, this lubrication procedure applies to one left and one right chassis slide on each of the following:

- (a) Radio Frequency Amplifier AM-1008/SRT (RFA)
 - (b) Radio Modulator MD-229/SRT (LLRM)
 - (c) Radio Frequency Oscillator O-275/SRT (RFO)
 - (d) Power Supply PP-1094/SRT (LVPS)
 - (e) Power Supply PP-1095/SRT (MVPS)
 - (f) Power Supply PP-1096/SRT (HVPS)
 - (g) Radio Modulator MD-230/SRT (HVPS)
- (8) RADIO FREQUENCY TUNER TN-229/SRT.

(a) JACKS.—The mating threads in the following jacks are to be lubricated as shown in figure 6-28:

1. J-301
2. J-302
3. J-303

(b) GEARS AND RACKS.—To check lubrication of the gears and racks in the r-f tuner, see figure

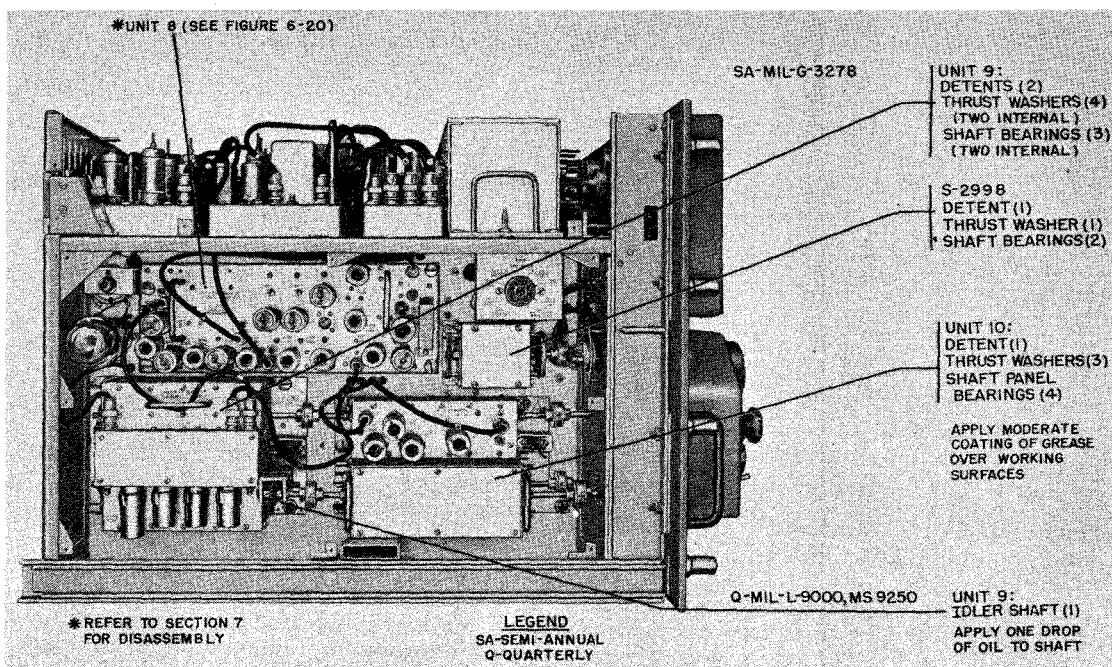


Figure 6-19. RFO, Left Side, Lubrication

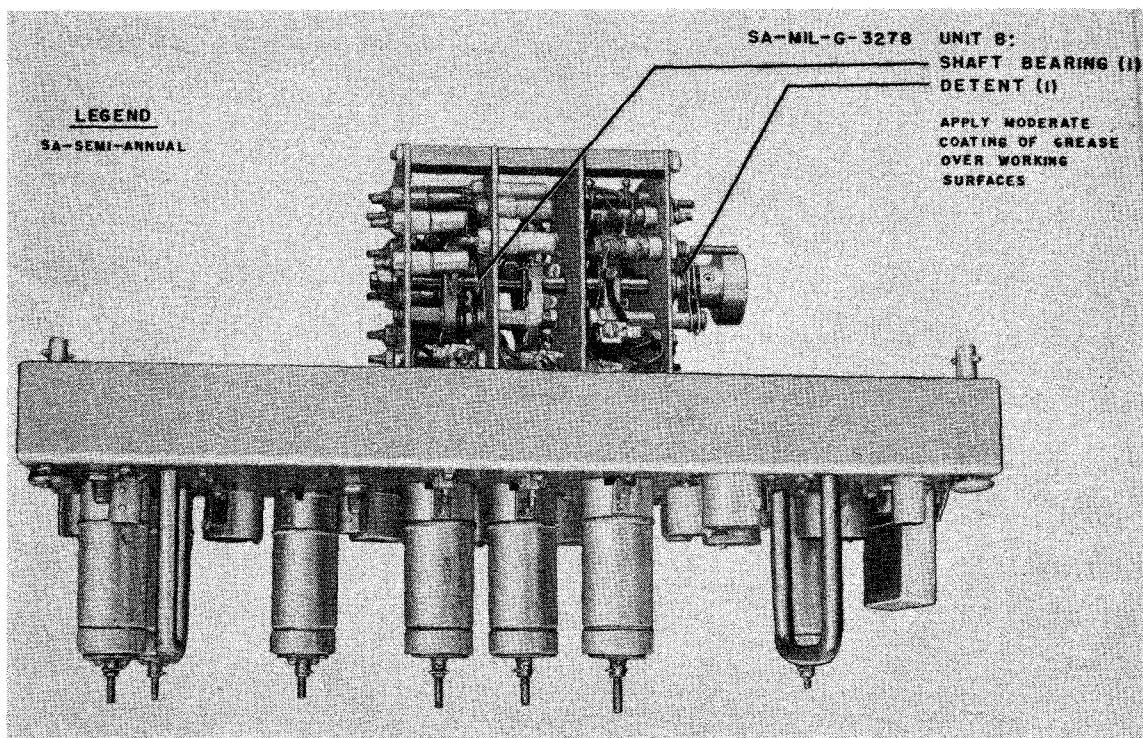


Figure 6-20. RFO, Unit 8 (Z-2330), Lubrication

6-29. In addition, this illustration may serve as a reference guide to other lubrication procedures in the r-f tuner.

(c) DRIVE MOTOR SHAFT EXTENSION.—See figure 6-30 for a cross-sectional view of the r-f tuner drive-motor extension-shaft with its lubrication instructions.

(d) CLUTCH-BRAKE.—The clutch-brake assembly, as shown in figure 6-31, must be disassembled before lubrication. Refer to Section 7 for disassembly, when necessary.

(e) MAIN DRIVE BALL BEARINGS.—For a detailed view of the main drive, see the cross-section line drawing of figure 6-32. Disassembly of the bearings is simple and obvious. No explanation is needed.

(f) ACTUATOR MOTOR.—There are three actuator motors in the equipment. One is in the r-f tuner and the other two are in the antenna coupler. These motors require some lubrication, as shown in figure 6-33.

(9) ANTENNA COUPLER CU-372/SRT.

(a) DRIVE GEARS.—Figure 6-34 shows lubricating procedures for the drive gears in the coupler. This illustration may serve as a guide to other lubrication procedures in the coupler.

(b) ANTENNA TRANSFER SWITCH.—Three bearings and four sliding switch contacts associated with antenna transfer switch S-3512 are called out in figure 6-35, showing the points of lubrication.

(c) LOAD SELECTOR SWITCH.—Figure 6-36 shows six sliding switch contacts and three ball bearings, with the lubrication procedures for these parts.

(d) ACTUATOR MOTORS.—The two actuator motors in the coupler are to be lubricated as noted in figure 6-33.

(e) JACKS.—The mating threads on the jacks in the antenna coupler are to be lubricated as directed in figure 6-28. These jacks are as follows:

1. J-3501
2. J-3502
3. J-3503
4. J-3504
5. J-3505
6. J-3506
7. J-3507

d. LUBRICATION PERIODS.—The lubrication periods mentioned on the lubrication illustrations are not intended to be absolutely inflexible. They are intended for use on the equipment under normal conditions. For extreme operating conditions, these periods may possibly be reduced to a fraction of the original. Some abnormal conditions encountered may be: (a) extremely wide ranges of temperature, (b) prolonged high-speed operation, (c) immersion in water, (d) operation in dust or sand, (e) exposure to moisture. Contamination of the lubricant will certainly take place under any of these conditions. Thus, the protective qualities of the lubricant applied will be lost.

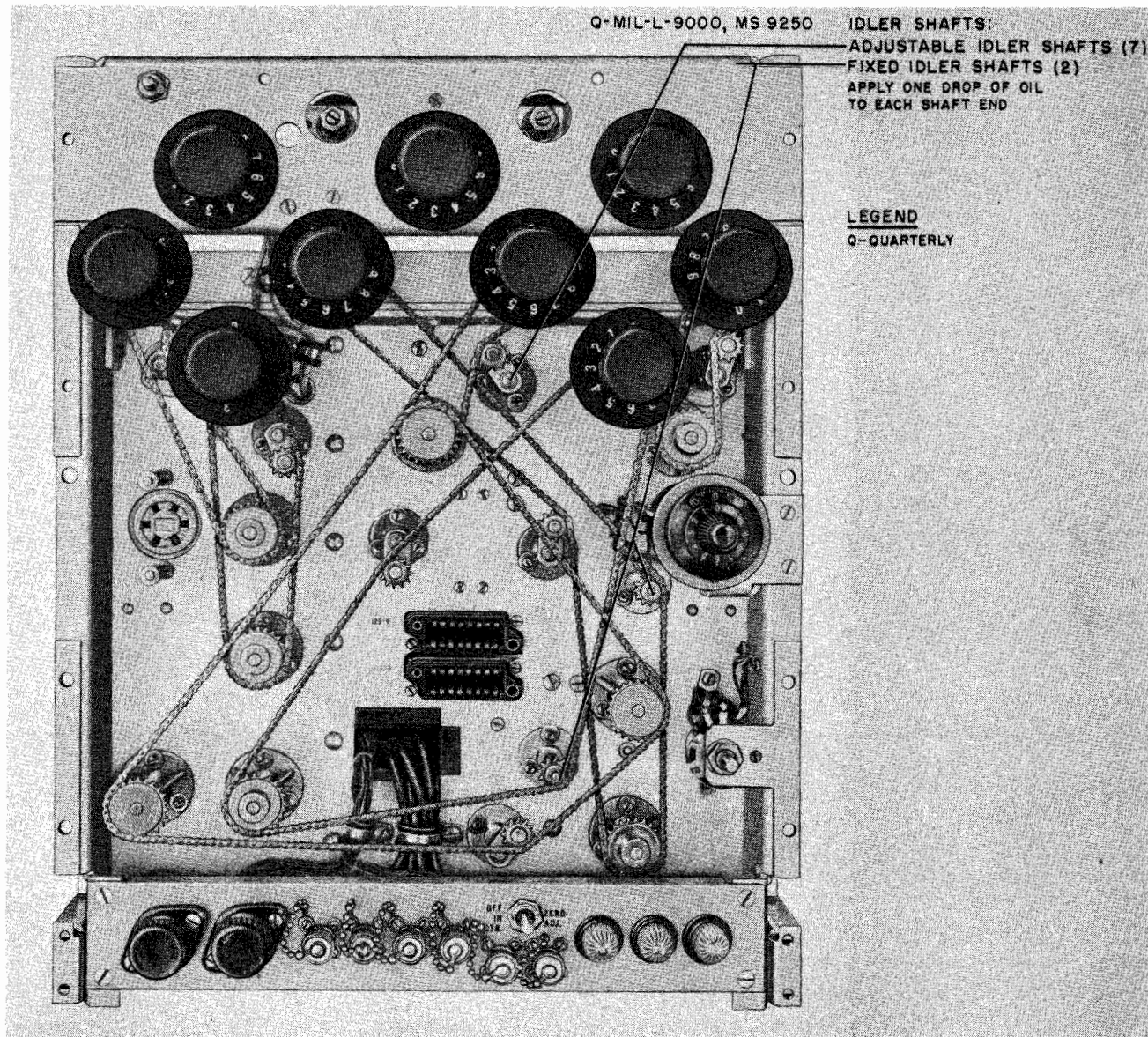


Figure 6-21. RFO, Control Panel Removed, Idler Gear Lubrication

Individual or on-the-spot judgment can lead to a reduction of the lubricating period in some borderline cases. In other cases, it may be obvious that the lubricant is not performing its task of keeping the equipment operating at optimum efficiency and that break-down will follow. Immediate relubrication of the part will be in order, with revision of the lubricating schedule to follow.

(1) QUARTERLY LUBRICATION.—Check the following illustrations for quarterly lubrication instructions:

- (a) Figure 6-12
- (b) Figure 6-13
- (c) Figure 6-15

- (d) Figure 6-16
- (e) Figure 6-17
- (f) Figure 6-19
- (g) Figure 6-21
- (h) Figure 6-25
- (i) Figure 6-27

(2) SEMIANNUAL LUBRICATION.—The following illustrations cover lubrication instructions for the semiannual interval:

- (a) Figure 6-11
- (b) Figure 6-12
- (c) Figure 6-13

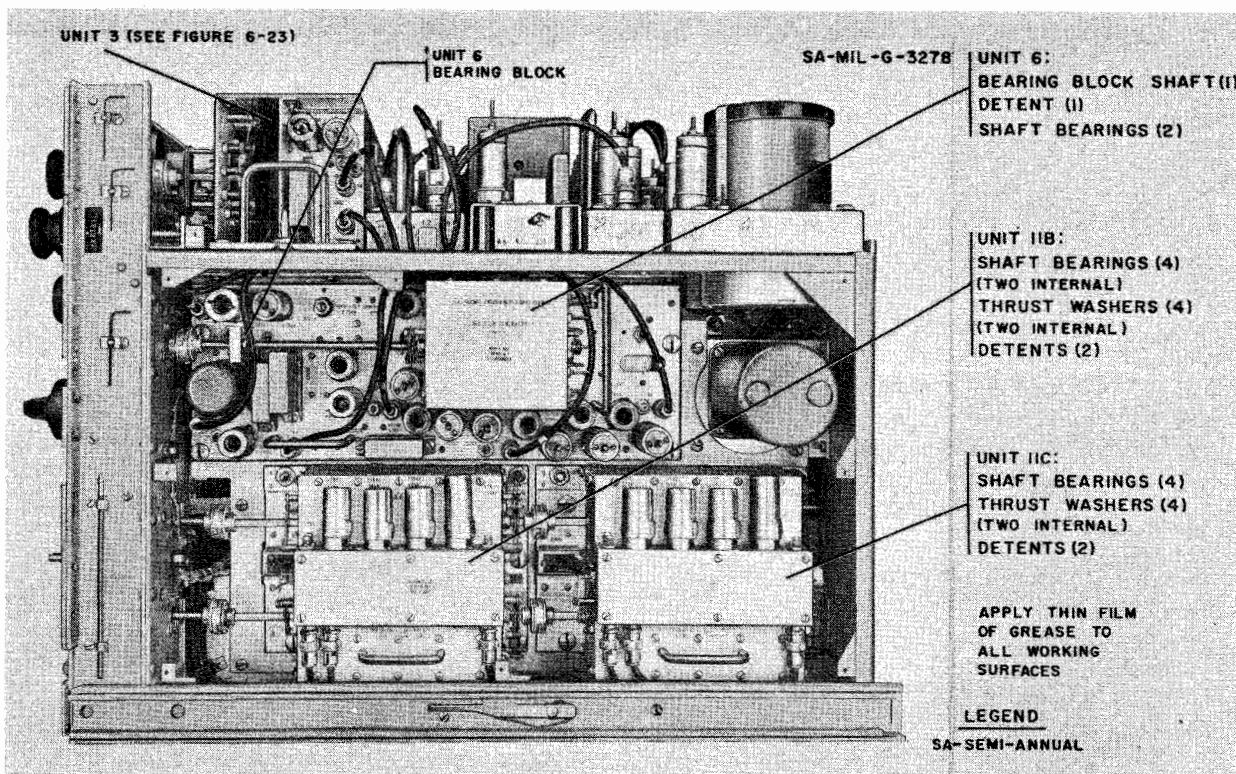


Figure 6-22. RFO, Right Side, Lubrication

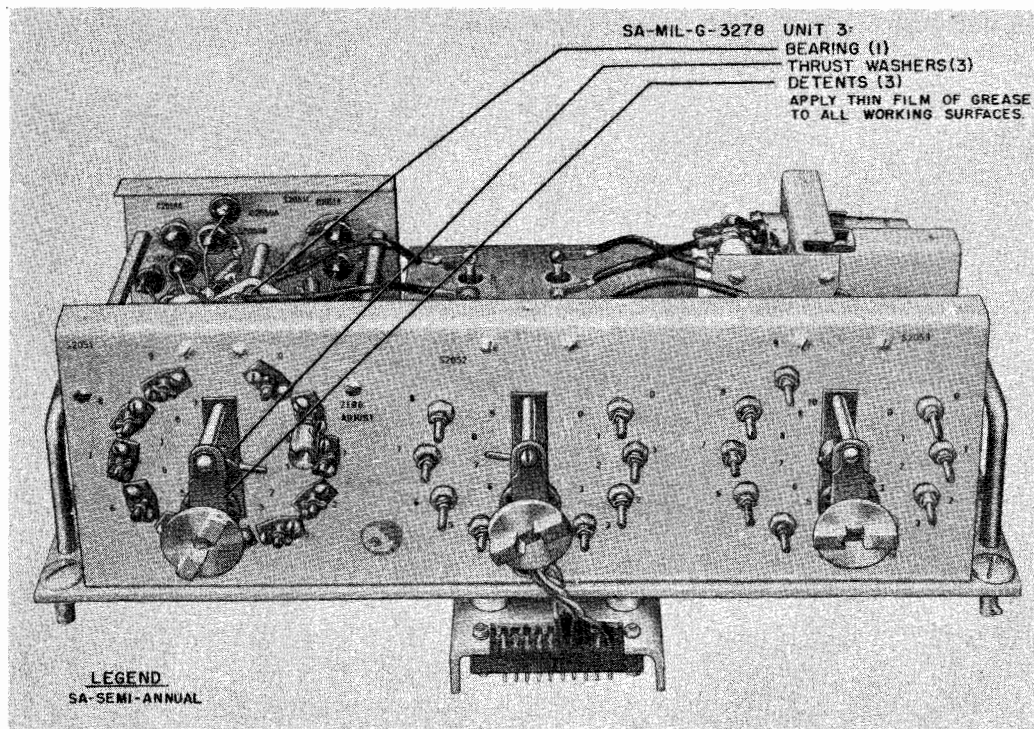


Figure 6-23. RFO, Unit 3 (Z-2053), Lubrication

- (d) Figure 6-14
- (e) Figure 6-16
- (f) Figure 6-17
- (g) Figure 6-19
- (b) Figure 6-20
- (i) Figure 6-22
- (j) Figure 6-23
- (k) Figure 6-24
- (l) Figure 6-26
- (m) Figure 6-27

(3) ANNUAL LUBRICATION.—The following illustrations contain lubrication procedures to be followed for the annual lubrication interval:

- (a) Figure 6-28
- (b) Figure 6-29
- (c) Figure 6-33
- (d) Figure 6-35
- (e) Figure 6-36

(4) BIENNIAL LUBRICATION.—The following illustrations contain lubrication procedures to be followed for the biennial lubrication interval:

- (a) Figure 6-30
- (b) Figure 6-31
- (c) Figure 6-34

(5) THREE-YEAR LUBRICATION.—The following are the lubrication illustrations that cover the three-year lubrication intervals:

- (a) Figure 6-32
- (b) Figure 6-35
- (c) Figure 6-36

(6) MAJOR OVERHAUL LUBRICATION.—The following are the lubrication illustrations that cover major overhaul intervals:

- (a) Figure 6-14
- (b) Figure 6-24
- (c) Figure 6-27

e. LUBRICATING GREASES.—Table 6-12 is a list of the greases to be used on the equipment. They are listed in the Navy Stock List of General Stores, FSC Group 91.

f. LUBRICATING OILS.—Table 6-13 is a list of the oils to be used on the equipment. They are catalogued in the Navy Stock List of General Stores, FSC Group 91.

g. LUBRICATING TOOLS.—Table 6-14 is a list of tools which may be used for lubricating purposes. The brushes are catalogued in Class 38, General Stores Section. The oil can is listed in General Stores Section, Class 53, Group 2.

b. DRY CLEANING SOLVENT.—Grease, oil, and dirt may be removed with Dry Cleaning Solvent P-S-661b. It is packed in commercial units for distribution and is furnished in 1-gallon, 5-gallon, and 55-gallon metal containers. The solvent may be used as a dip or a spray, or it may be applied with a rag or brush. This specification covers two types of solvent, referred to commercially as "Stoddard Solvent" and "140°F. Solvent".

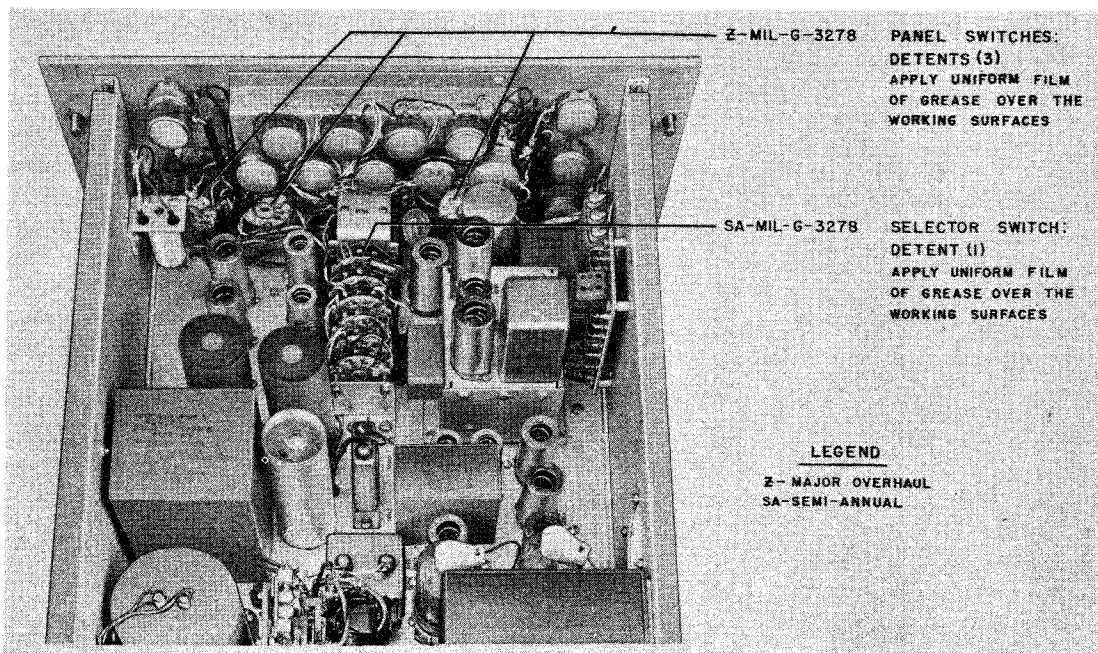


Figure 6-24. Radio Modulator MD-229/SRT (LLRM), Front Panel Switch Lubrication

TABLE 6-12. LUBRICATING GREASES

| ITEM | SPECIFICATION NUMBER AND TITLE | TYPE | STANDARD NAVY STOCK NUMBER | | | | | |
|------|--|------|----------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | | 8 oz. | 1 lb. | 5 lb. | 25 lb. | 35 lb. | 100 lb. |
| 1. | MIL-G-3278; Grease, Aircraft and Instrument | | WS9150-261-8297 | WS9150-261-8298 | WF9150-223-4012 | WR9150-190-0897 | WF9150-190-0898 | WS9150-190-0899 |
| 2. | 14-L-3; Grease, Ball and Roller Bearing | I | | WM9150-235-5564 | WF9150-235-5544 | | | |
| 3. | MIL-L-15719; Grease, Silicone Insulated Electric Motor | HTG | WS9150-257-5358 | | | | | |

TABLE 6-13. LUBRICATING OILS

| ITEM | SPECIFICATION NUMBER AND TITLE | MS | STANDARD NAVY STOCK NUMBER | | | | |
|------|--|-------|----------------------------|-----------------|-----------------|-----------------|-----------------|
| | | | Bulk | 1 pt. | 1 gal. | 5 gal. | 55 gal. |
| 1. | MIL-L-9000; Lubricating Oil, Diesel (SAE 30) | 9250 | WF9150-231-6656 | | | WF9150-231-6653 | WF9150-231-6655 |
| 2. | MIL-L-17331; Lubricating Oil, Turbine (SAE 30) | 2190T | WM9150-235-9064 | | | WM9150-235-9061 | WF9150-235-9063 |
| 3. | 14-O-20; Lubricating Oil, Instrument | | | WS9150-223-8898 | WS9150-261-7902 | | |

TABLE 6-14. LUBRICATING TOOLS

| ITEM | SPECIFICATION NUMBER AND TITLE | NAVY STOCK NO. | USE | DESCRIPTION |
|------|---|----------------|--|---|
| 1. | Wash-out Brush, Acid Swabbing | G38-B-5569-675 | Use with solvents for cleaning away oil and grease | Plastic; one piece; curved with rounded ends; 6¾ in. over-all; medium stiff nylon |
| 2. | Fed. H-B-643, Type II; Brush, Acid Swabbing | G38-B-4480 | (Same as item 1, above) | Sheet tin tube; bristles secured by clinching; 5¾ in. over-all |
| 3. | Fed. H-B-118, Type II; Brush, Artists | G38-B-774 | Use for applying oil | Hardwood handle; round, tapered metal ferrule; solvent resistant |
| 4. | Fed. H-B-241; Fitch, Brush, Artists | G38-B-1375 | (Same as item 3, above) | Hardwood handles; steel ferrule with corrosion-resistant coating |
| 5. | Fed. H-B-212, Type II; Brush, Dusting | G38-B-1305 | Dusting surfaces | Round; 8¼ in. long |
| 6. | Brush, Dusting | G38-B-5566 | (Same as item 5, above) | One piece; over-all length 10½ in. |
| 7. | Fed. RR-C-87 Can, Oil | G53-C-490 | Use as oil dispenser | ½ oz. capacity with spout and screw cap |

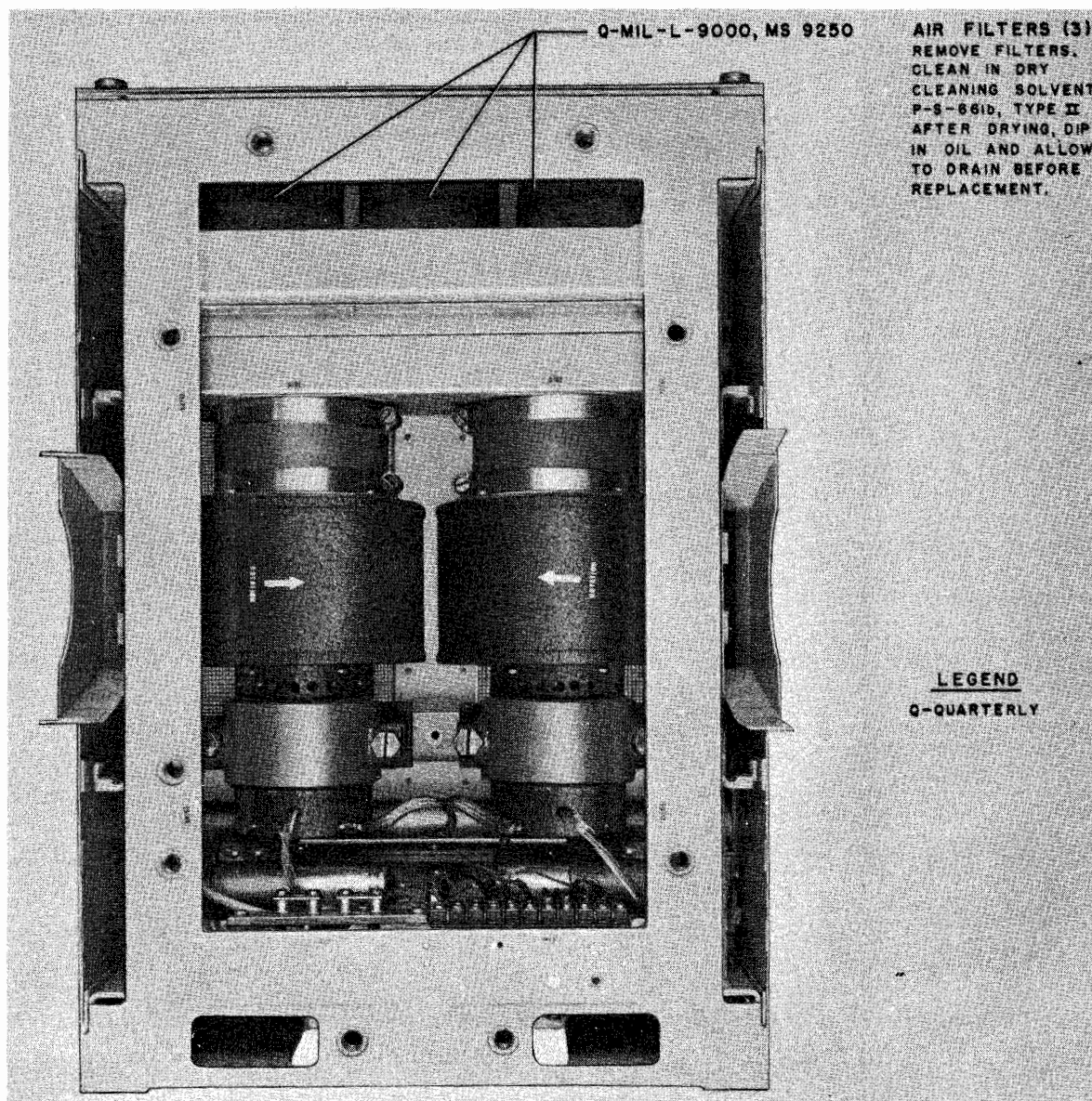


Figure 6-25. Mounting MT-1423/SRT (Base Mount), Air Filters, Lubrication

6. SPECIAL MAINTENANCE.

a. **SHAFTS.**—Shafts should be checked for dirt and corrosion. Remove dirt with dry-cleaning solvent (refer to paragraph 5b). The shafts may also be cleaned with fine crocus cloth to remove obstinate dirt marks. Use a fine file or fine sandpaper to remove burrs. After cleaning, the shafts should be relubricated according to the procedures listed in the lubrication illustrations.

b. **VARIABLE CAPACITORS.**—Noise, loss of sensitivity, and improper tuning may be caused by faulty or dirty tuning capacitors. Serious losses may occur, as well, in certain types of tuned circuits.

Rotor contacts, bearings and plates may be cleaned with dry-cleaning solvent. Pipe cleaners are especially useful for cleaning between capacitor plates, if available.

A small, soft brush, dipped in solvent, may also be used for this purpose. Be careful not to damage or bend any of the plates.

c. **RELAYS.**—Some relay contacts are plated with thin coats of silver. In cleaning this type of contact, avoid the use of abrasives, which may damage the contact surfaces. These surfaces are cleaned with dry-cleaning solvent.

Pitted contacts on heavier relays, such as those used for power control circuits, are cleaned with a fine grade of crocus cloth. Badly pitted contacts should be replaced singly, if possible. If not, a complete new relay may have to be installed. After cleaning, the contacts of both types of relays are finished with a burnishing tool.

Check the working parts of the relays, as follows:

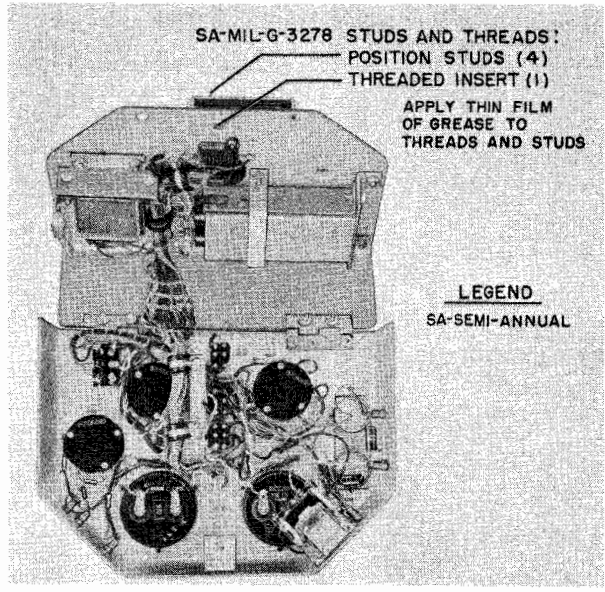


Figure 6-26. Control-Indicator, Lubrication

Step 1. Check the armature pivot points. They should be free of burrs, rust, corrosion, or any other defect that may prevent free movement. Remove burrs or corrosion with a fine file or fine sandpaper.

CAUTION

Be sure that the shape and location of the pivot points have not been changed.

Step 2. The return spring should be inspected for good tension. Replace the spring if rusted or damaged.

Step 3. Examine the relay winding for damage to the insulation. Damaged wires or insulation may be repaired with tape or insulated tubing (spaghetti).

Step 4. Check the relay core for corrosion. If corroded, the relay should be replaced to avoid possible future failure.

Step 5. Check the frame. Repair or replace if damaged.

Note

All parts of the relay may be cleaned with dry-cleaning solvent. (Refer to paragraph 5b.)

d. JACKS AND PLUGS.—Particular care should be used in checking the mating threads when examining jacks and plugs. Any damage to the threads will make it difficult, if not impossible, to mate the connectors. Clean off grease and dirt with dry-cleaning solvent, using a firm, bristle brush. After cleaning and checking the plug or jack, it should be relubricated by covering the threads with a thin film of grease, specification MIL-G-3278 (item 1, table 6-12). Avoid overlubrication.

e. GEARS AND RACKS.—The gears and racks must be checked for dirt and other foreign particles in the gear teeth. Clean off dirt or caked lubricant with a small brush dipped in dry-cleaning solvent.

The gear shafts may also be cleaned with the solvent. Polish the shaft with a piece of fine crocus cloth, if necessary.

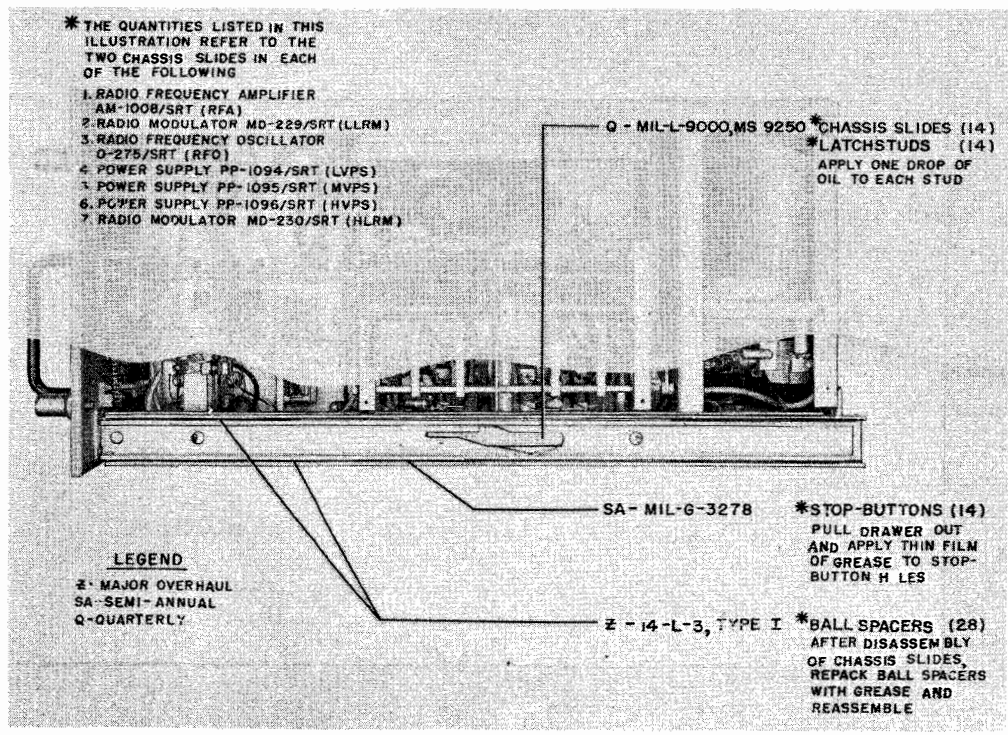


Figure 6-27. Chassis Slide, Lubrication

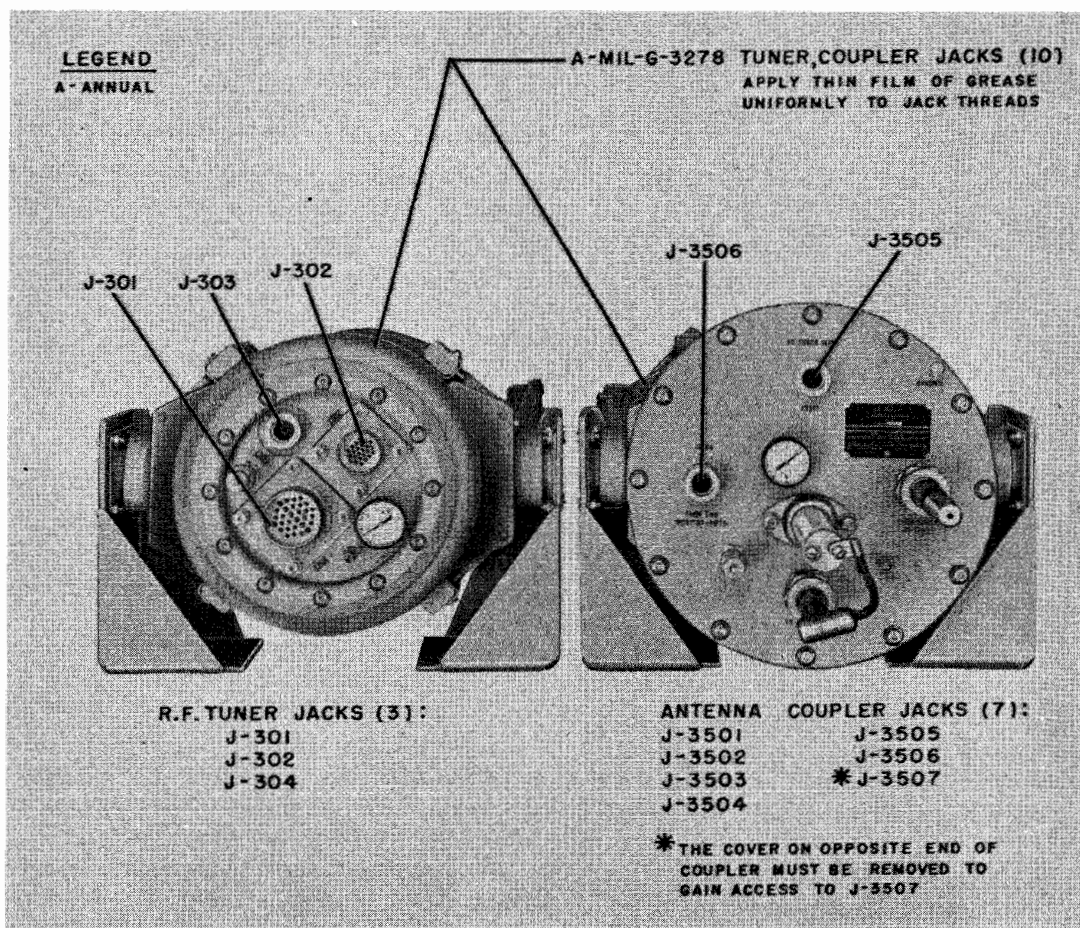


Figure 6-28. Radio Frequency Tuner TN-229/SRT and Antenna Coupler CU-372/SRT Jacks and Plugs, Lubrication

After cleaning, the gears and racks are to be relubricated, according to the procedures described in the lubrication illustrations.

f. WAFER SWITCHES AND DETENTS.—Examine the contacts for good spring tension. Weak spots require restoration of spring tension. However, long, telephone-type switch or relay contacts should never be bent. These contacts should be replaced, if possible. If the contacts cannot be replaced singly, the entire switch may have to be replaced, as poor contact pressure leads to trouble and eventual failure.

Check the detent actions and the switch shaft. These parts, as well as the switch contacts, may be cleaned with dry-cleaning solvent.

The various detent assemblies, especially those in the various subunits of the RFO, need careful attention. They should be repaired immediately or replaced if repair is not practical.

After cleaning a switch or detent, the part should be relubricated as directed in the lubrication instruction illustrations.

g. CHAINS.—When inspecting the chains, be sure to check the adjustment of the idlers. Proper tension on the chains must be maintained at all times. To achieve correct tension, a balance must be found which is a compromise between ease of operation and minimum back lash. In case of severe damage to the chain, it should be replaced. Remove dirt and grease with the dry cleaning solvent.

b. CLEANING BEARINGS.—Before relubricating, the bearings should be cleaned and inspected. They may be cleaned by swishing in dry-cleaning solvent. Use a small brush to clean out any stubborn dirt or grease which tends to cling to the bearings. Dry by spinning in air.

i. LUBRICATING BEARINGS.—Examine all polished rubbing surfaces for cracks or pits. Pitted or cracked bearings must be replaced. After cleaning and examination, the bearings are to be lubricated according to the instructions in the lubrication illustrations.

j. MOTORS.—Section 7 of this instruction book describes disassembly procedures in detail. Refer to Section 7 for the more complex assembly or reassembly procedures.

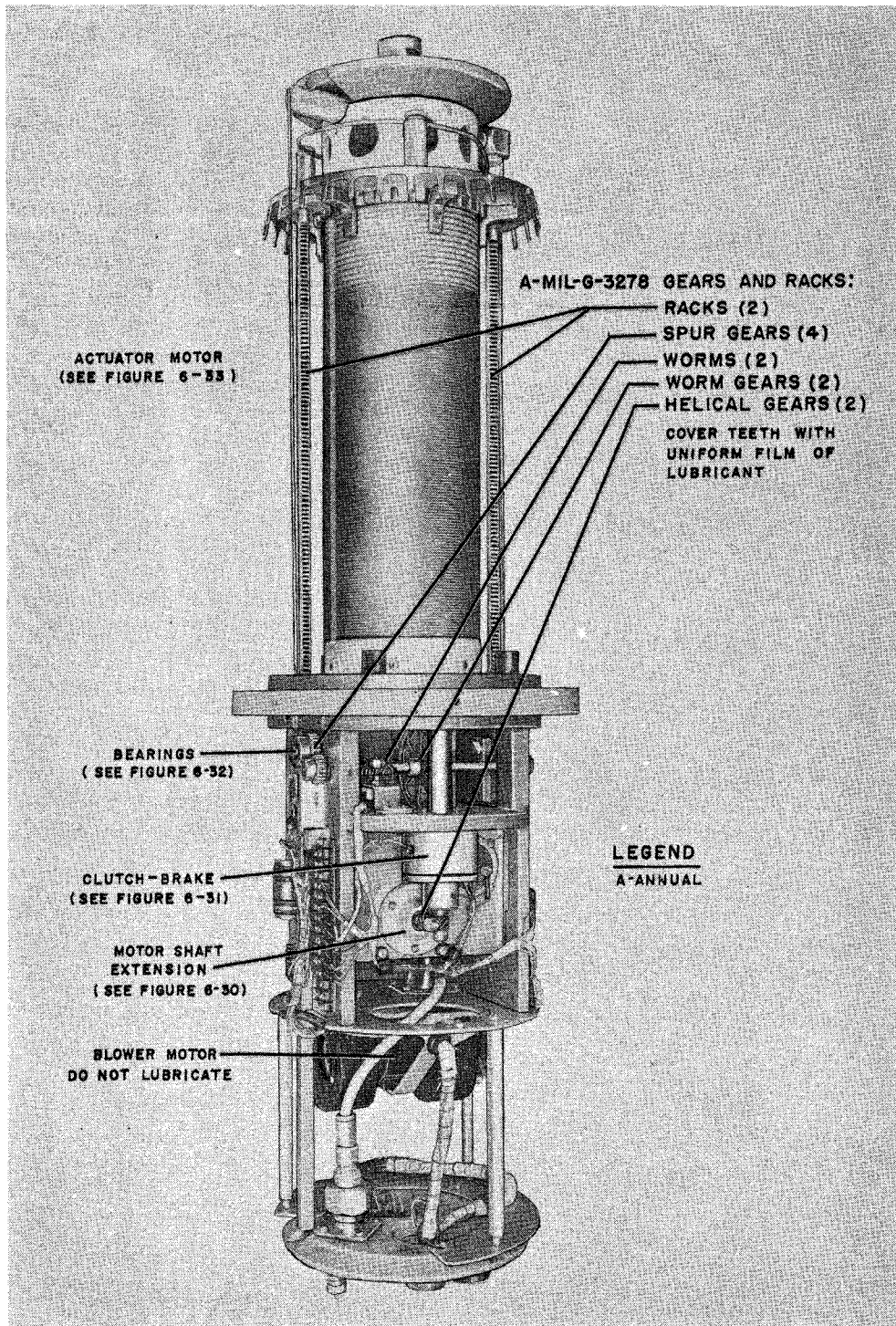


Figure 6-29. R-f Tuner, Gears and Racks, Lubrication

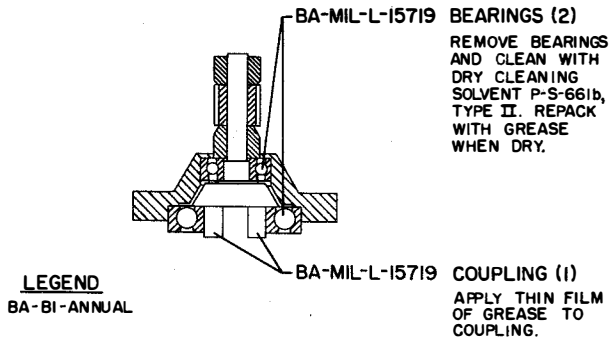


Figure 6-30. R-f Tuner, Cross Section of Drive Motor Shaft Extension, Lubrication

(1) GENERAL.—Some general motor maintenance procedures follow:

(a) Motor brushes are to be replaced in the same relative positions they occupied previously.

(b) Commutators should be dressed, if necessary, with sandpaper (not emery cloth).

(c) After undercutting mica, clean and polish as a finishing operation.

(d) Bearings are to be treated as described in paragraph 6b of this section.

(e) Clean and polish motor shafts with a piece of fine crocus cloth.

(f) When reassembling, be sure to check for excessive shaft end play.

(g) Avoid overlubrication. Run the motor for a few minutes after assembly to check. No lubricant should be thrown off when the motor is running.

(2) RFA BLOWER MOTOR B-1306.—A check period of 1,000 hours, as noted on the TOTAL HOURS-FILAMENT counter on the front panel of the Power Supply PP-1095/SRT (MVPS), should be the maximum for this motor. Since the motor is in continuous operation this check period should not be exceeded by more than 50 percent. Check for noise and/or excessive heating.

(3) BASE MOUNT MOTORS B-701 AND B-702.—Check these motors every 10,000 hours as noted on the TOTAL HOURS-FILAMENT meter. Bearings must be carefully cleaned and inspected, if necessary. Refer to the bearing information of Section 6, paragraph 6b, and any pertinent disassembly procedures in Section 7.

(4) R-F TUNER AND COUPLER MOTORS.—The r-f tuner has drive motor B-301, blower motor B-306, and actuator motor B-303. The coupler has actuator motors B-3501 and B-3502. An annual inspection of these motors is required. Check Section 7 for the disassembly procedures necessary to gain access to these motors. The drive motor (B-301) and the blower motor (B-306) require no lubrication but should be examined for operating defects. The three actuator motors (B-303, B-3501, and B-3502) require some lubrication. This procedure is outlined in figure 6-33. Refer to Section 6, paragraph 6b, for bearing information.

k. RECORD OF TUBE CHANGES.—When it becomes necessary to change any of the tubes, the date and the reading of the TOTAL HOURS-FILAMENT meter should be recorded, as provided in the space at the top of table 6-15.

l. HAIR AND BRISTLE BRUSHES.—Some of the brushes listed in table 6-14 are made of hair or bristle.

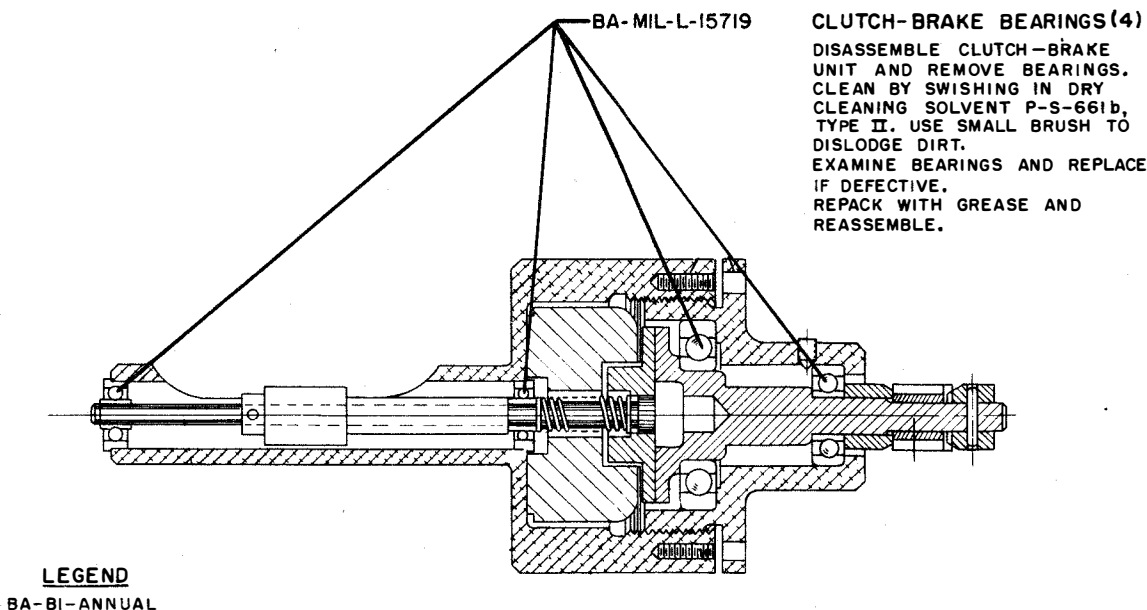


Figure 6-31. R-f Tuner, Cross Section of Clutch-Brake Assembly, Lubrication

TABLE 6-15. RECORD OF TUBE CHANGES

| TUBE TYPE | CHANGE DATA | | | CHANGE DATA | | | CHANGE DATA | | |
|-----------|-------------|---------------|-------------|-------------|---------------|-------------|-------------|---------------|-------------|
| | DATE | METER READING | TUBE CHANGE | DATE | METER READING | TUBE CHANGE | DATE | METER READING | TUBE CHANGE |
| OA2 | | | | | | | | | |
| OB2 | | | | | | | | | |
| 3B28 | | | | | | | | | |
| 4-400A | | | | | | | | | |
| 4D21 | | | | | | | | | |
| 5R4WGB | | | | | | | | | |
| 6AG5 | | | | | | | | | |
| 6AG7 | | | | | | | | | |
| 6AK6 | | | | | | | | | |
| 6AS7G | | | | | | | | | |
| 6E5 | | | | | | | | | |
| 12AU7 | | | | | | | | | |
| 5651 | | | | | | | | | |
| 5654 | | | | | | | | | |
| 5687 | | | | | | | | | |
| 5725 | | | | | | | | | |
| 5726 | | | | | | | | | |
| 5751 | | | | | | | | | |
| 5814 | | | | | | | | | |
| 5933 | | | | | | | | | |
| 6201 | | | | | | | | | |

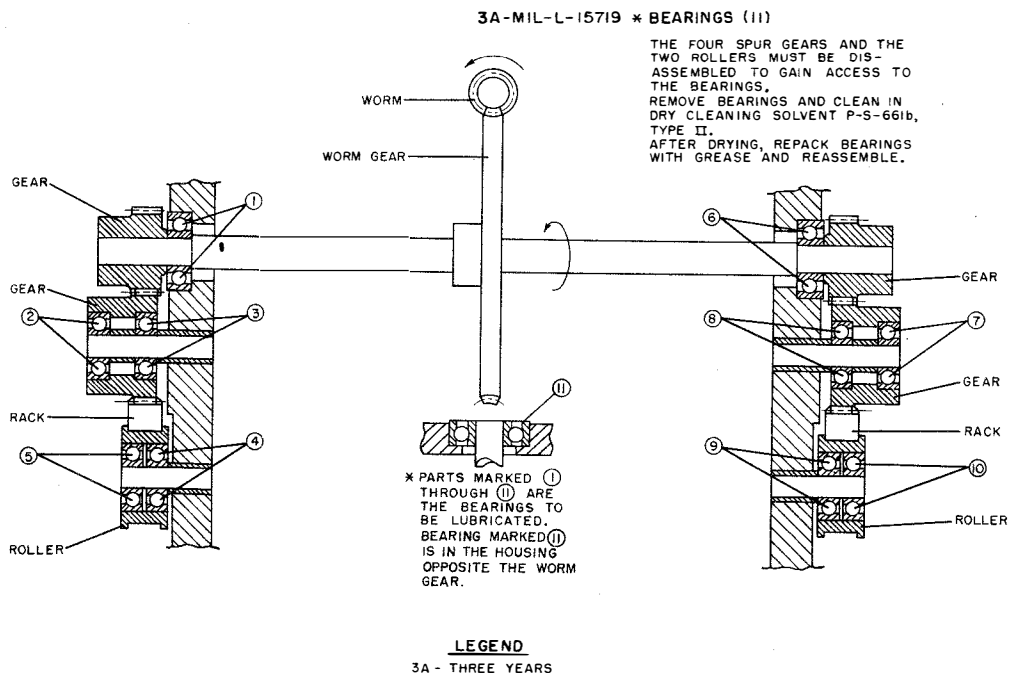


Figure 6-32. R-f Tuner, Cross Section of Main Drive Bearings, Lubrication

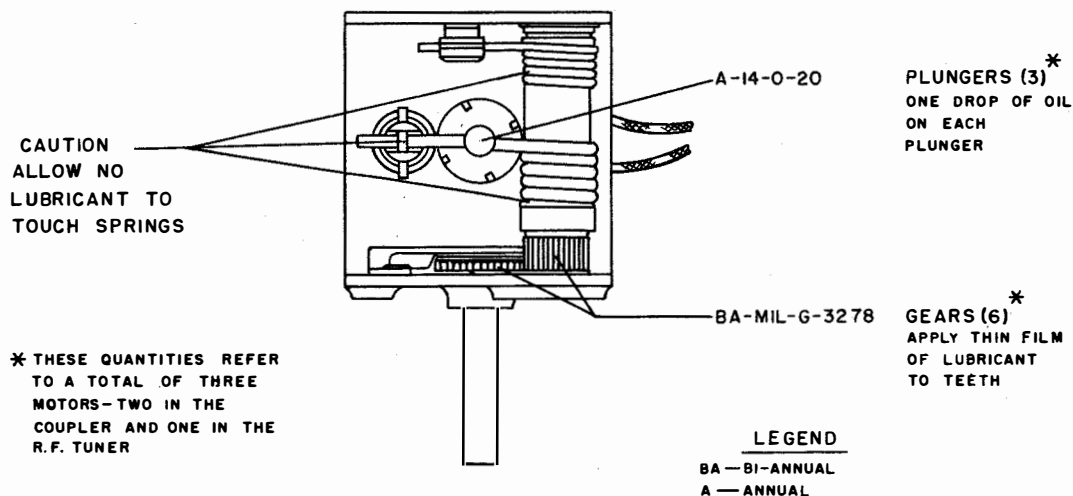


Figure 6-33. Actuator Motor, Lubrication

Brushes of this type are highly susceptible to insect infestation. Since insect repellents are highly volatile, they must be replenished as they wear off. To protect the brushes, when a partial issue is made, the repellent must be replaced and the package must be resealed. Inspect these packages periodically (3 to 6 months).

Brushes should be cleaned immediately after using. Do not stand a brush on its bristles or it will become distorted. Prolonged immersion in water will destroy the resilience of bristles, rust the ferrule, and swell the block.

m. PRESSURIZING THE R-F TUNER AND COUPLER.—When it becomes necessary to recharge either of these units, it is important that only fresh, dry gas be used. Refer to Section 7 for recharging, purging, and exhausting procedures.

n. CHARGING R-F TUNER OR COUPLER. (See figure 6-37.)—When pressure in the r-f tuner or the coupler falls below 15 psi, it will be necessary to add more nitrogen to bring the pressure up to its normal 20 psi. A method for charging those units follows:

Note

This procedure, with its accompanying illustration, pertains to the r-f tuner. However, the antenna coupler is treated in exactly the same manner.

Step 1. Check the regulator (1) to be sure that

the adjusting screw (2) and the needle valve (3) are closed at this time.

Step 2. Fasten the delivery hose (4) securely to the regulator (1) by means of the hose-coupling nut (5).

Step 3. Attach the regulator (1) to the gas cylinder and secure the hexagonal inlet coupling nut (6).

Step 4. Connect the delivery hose (4) to the r-f tuner intake valve (7).

Step 5. Open the cylinder valve (8).

Note

With a full 9-cubic-foot nitrogen gas cylinder, the cylinder-pressure gauge (9) on the regulator (1) should read about 1,600 psi.

Step 6. Open the adjusting screw (2) until the delivery-pressure gauge (10) reads 20 psi.

Note

The relief valve (11) is not used, except for purging or exhausting the cylinder as outlined in Section 7.

Step 7. Open the needle valve (3) and bring the pressure up to 20 psi as indicated on the pressure gauge (12). When the desired pressure is attained, the cylinder valve (8) is closed. The regulator (1) may then be removed from the gas cylinder.

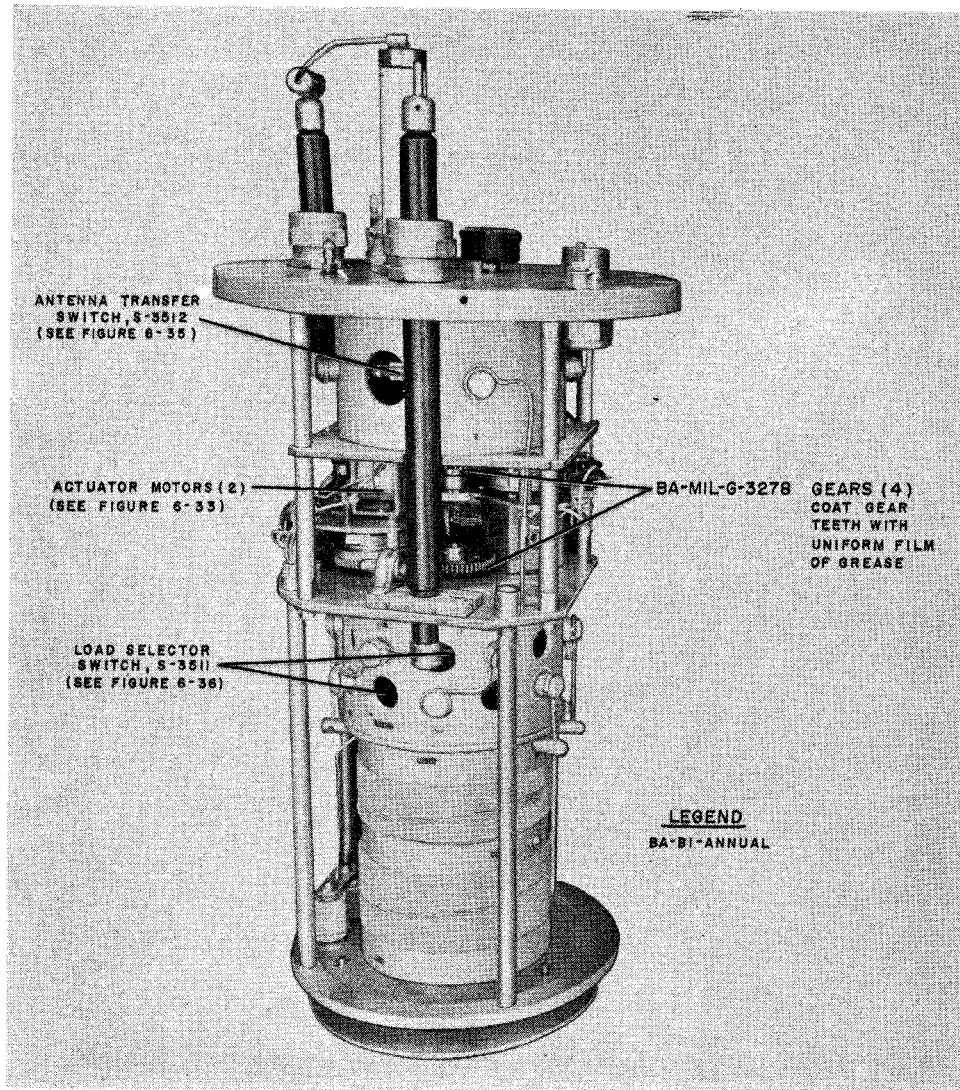


Figure 6-34. Antenna Coupler, Lubrication

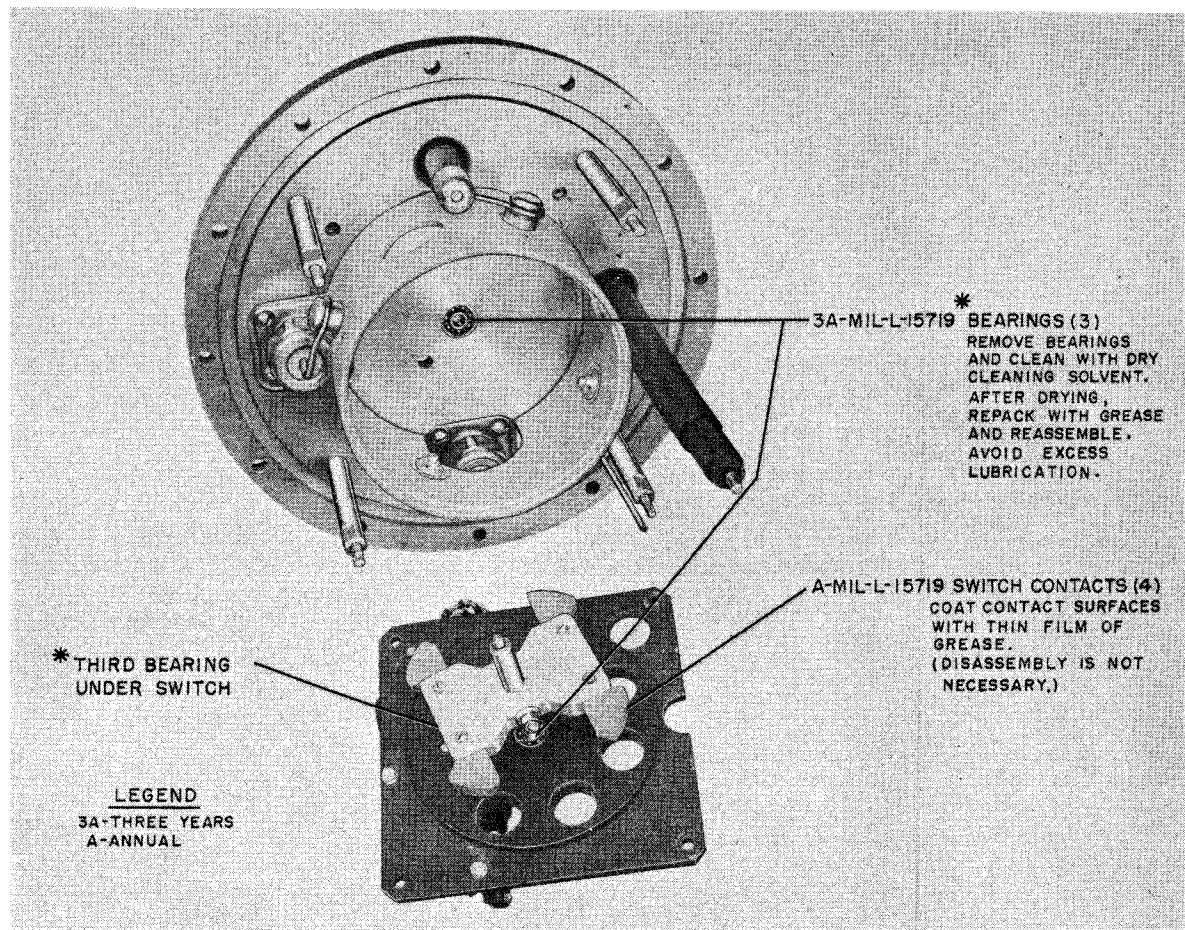


Figure 6-35. Antenna Transfer Switch S-3512 and Bearings, Lubrication

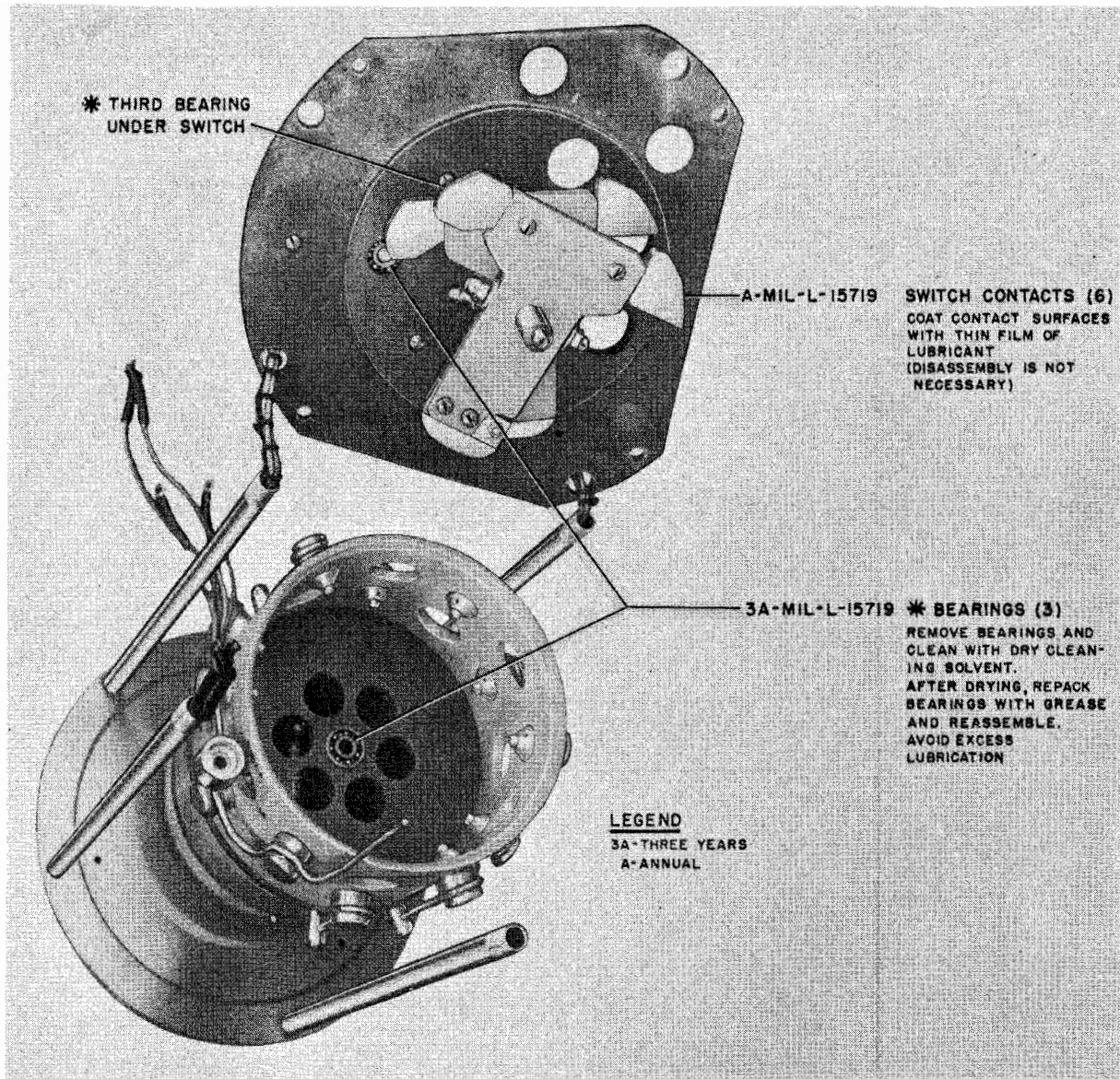


Figure 6-36. Load Selector Switch S-3511 and Bearings, Lubrication

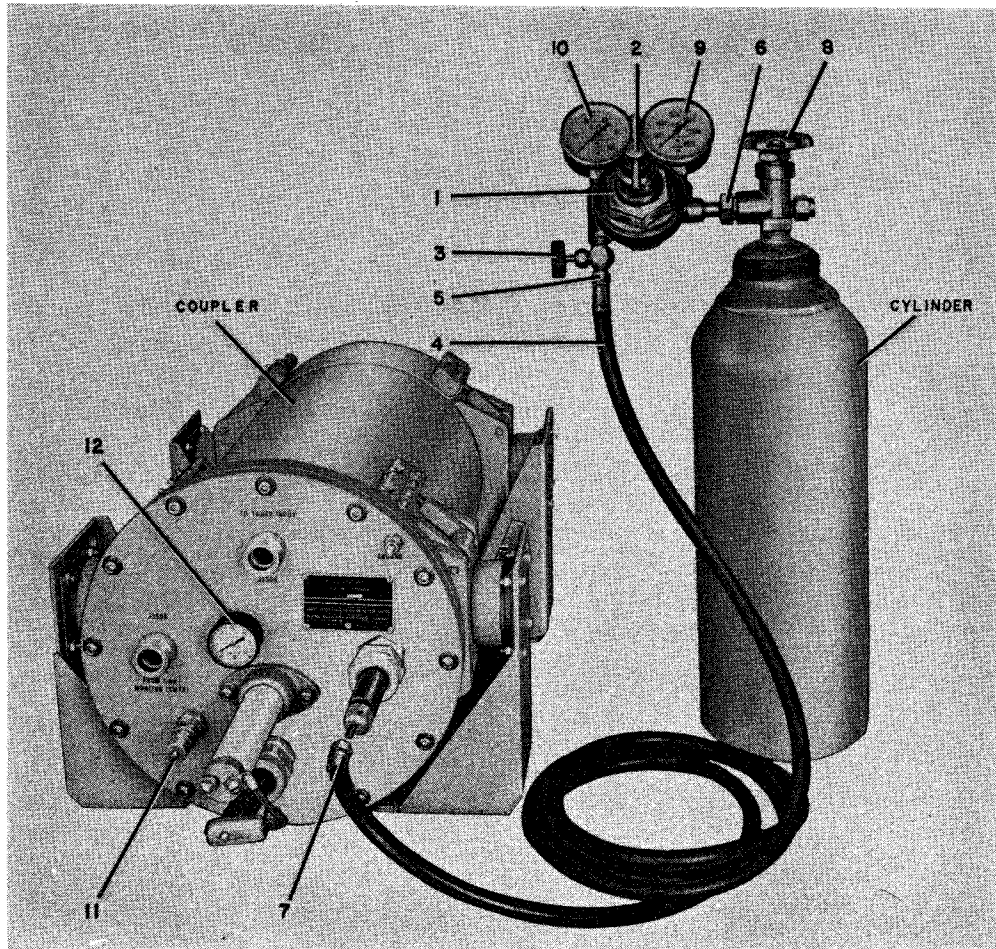


Figure 6-37. Typical Pressurizing Procedure

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NAVSHIPS 92121(A)

INSTRUCTION BOOK

for

RADIO TRANSMITTING SETS

AN/SRT-14, AN/SRT-14A, AN/SRT-15,
AN/SRT-15A, AN/SRT-16 AND AN/SRT-16A

SECTION 7

CORRECTIVE MAINTENANCE

FEDERAL TELEPHONE AND RADIO COMPANY

A division of INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

CLIFTON, NEW JERSEY

DEPARTMENT OF THE NAVY

BUREAU OF SHIPS

★
Contract: NObsr-52021
NObsr-52622

★
Approved by BuShips: 26 October 1955

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| 4 | Operation |
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SECTION 7

CORRECTIVE MAINTENANCE

1. INTRODUCTION.

This section contains information required for the repair of Radio Transmitting Sets AN/SRT-14, 15 and 16.

Note

The AN/SRT-14A, 15A and 16A are non-magnetic versions of the AN/SRT-14, 15 and 16 respectively. As the nonmagnetic versions vary from the standard types only in the material used for cabinet panels, all information on the corrective maintenance of the AN/SRT-14, 15 and 16, as set forth in the following section, applies equally as well for the AN/SRT-14A, 15A and 16A.

Note

Where, throughout this section, reference is made to either low level radio modulator or high level radio modulator, it should not be

interpreted as meaning the technique of modulation known as grid modulation or low level modulation, but rather as referring to the operating *power* level.

Maintenance personnel must be prepared to repair and align units that have failed in operation. The source of the trouble must be located, the defect remedied, and the equipment restored to operating condition. The following paragraphs describe the theory of localization of faults and system trouble-shooting procedures, and contain detailed instructions for trouble-shooting and repair of the various units of this equipment.

Maintenance personnel must try to find the source of the trouble causing equipment failure, particularly when the trouble is a recurrent one. The recurrence of a fault usually indicates that the *effect*, not the *cause*, has been remedied.

FAILURE REPORTS

"Report each failure of the equipment, whether caused by a defective part, wear, improper operation, or an external cause. Use ELECTRONIC FAILURE REPORT form DD787. Each pad of the forms includes full instructions for filling out the forms and forwarding them to the Bureau of Ships. However, the importance of providing complete information cannot be emphasized too much. Be sure that you include the model designation and serial number of the equipment (from the equipment nameplate), the type number and serial number of the major unit (from the major unit nameplate), and the type number and reference designation of the particular defective part (from the instruction book). Describe the cause of the failure completely, continuing on the back of the card if necessary. Do not substitute brevity for clarity. And remember — there are two sides to the failure report —

"YOUR SIDE"

Every FAILURE REPORT is a boost for you:

1. It shows that you are doing your job.
2. It helps make your job easier.
3. It insures available replacements.
4. It gives you a chance to pass your knowledge to every man on the team.

"NAVY SIDE"

The Bureau of Ships uses the information to:

1. Evaluate present equipment.
2. Improve future equipment.
3. Order replacements for stock.
4. Prepare field changes.
5. Publish the information.

Always keep a supply of failure report forms on board. You can get them from the nearest District Publications and Printing Office."

WARNING

OPERATION OF THIS EQUIPMENT INVOLVES THE USE OF HIGH VOLTAGES WHICH ARE DANGEROUS TO LIFE. OBSERVE SAFETY REGULATIONS AT ALL TIMES. DO NOT CHANGE TUBES OR MAKE ADJUSTMENTS INSIDE EQUIPMENT WITH HIGH VOLTAGE ON. DO NOT USE "BATTLE SHORT" ^(U) FOR BY-PASSING INTERLOCKS. NEVER MEASURE POTENTIALS IN EXCESS OF 1,000 VOLTS BY MEANS OF FLEXIBLE TEST LEADS OR PROBES.

2. THEORY OF LOCALIZATION.

The manner in which the equipment operates or fails to operate often indicates the source of trouble. Knowledge of the control circuits is most important for the localization of faults. Therefore, the technician should familiarize himself with the simplified power and control schematics, figures 7-114 through 7-119. The sequence of the operations that result in the establishment of a frequency is accompanied by visual panel indications.

The order in which the visual indications appear is shown in table 7-1, together with the probable sources of trouble. This chart shows the sequence of operations between turning on the power and going on the air with the carrier, and will assist maintenance personnel in localizing a fault.

3. TROUBLE-SHOOTING THE TRANSMITTER BAY.

a. GENERAL.—Radio Transmitting Sets AN/SRT-14, 15 and 16 are manually operated.

The system trouble-shooting chart, table 7-1, lists visual indications of transmitter bay operation. The heavy blocks tell what is to be observed, and the heavy paths between these blocks describe the indication that should be obtained when the transmitter bay is operating properly, from the time that main power is applied to the time that the carrier is keyed on the air. Indications of proper operation are listed in the general order in which they occur. Each indication along the heavy path is evidence of proper operation only if all preceding indications have been obtained. However, it should be noted that some of the indications may occur simultaneously. If the proper indication is not obtained, the lighter blocks name the unit (or units) in which trouble may exist. The technician should then refer to the trouble-shooting information for that particular unit.

Note

If the proper indication fails to occur, first check the indicating component.

The transmitter bay may be operated without radiating an r-f carrier from the antenna. A dummy load,

type DA-91/U, is used to permit the transmitter to be operated at full power during test and maintenance procedures. This load is connected to the cable from the transmitter that terminates in P-3314, normally connected to J-3201 in the Transmitter Coupler CU-402/SRT, to the "N" type coaxial receptacle on the dummy load. The transmitter can thus be completely isolated from the remainder of the equipment.

b. TEST EQUIPMENT REQUIRED.

(1) MULTIMETER ME-25A/U.—0 to 1,000 v ac/dc in 7 ranges; 0 to 1,000 ma in 6 ranges; 0 to 1,000 megohms in 6 ranges.

(2) OSCILLOSCOPE OS-8A/U.—Sensitivity, 0.1 v (RMS)/in.; response, ± 3 db from 30 cps to 2 mc.

(3) FREQUENCY METER AN/USM-29 OR AN/FRM-3.—15 kc to 26 mc in 10-cps steps; accurate to within 0.0001 percent ± 4 cps; (± 1 cps in 1 mc ± 4 cps).

(4) RECEIVER TYPE RBA, RBB, RBC SERIES OR EQUIVALENT.—Frequency coverage: 15 kc to 500 kc; 0.5 to 4.0 mc; 4.0 to 27.0 mc.

(5) AUDIO OSCILLATOR TS-382A/U.—20 to 200,000 cps, ± 2 percent; output, 0 to 100 mw.

(6) DUMMY LOAD DA-91/U.—600 watt; air cooled.

(7) SIGNAL GENERATOR, RF, AN/URM-25.—10 kc to 50 mc; output, 2v maximum.

(8) AMMETER, DC, NAVY TYPE 60107 OR MULTIMETER AN/PSM-4.—0 to 1,000 μ a, in 5 ranges; accuracy, ± 2 percent.

(9) RESISTANCE BRIDGE, ZM-4/U.—1 to 10 megohms; accuracy, ± 0.15 percent.

(10) RADIO FREQUENCY BRIDGE, NAVY TYPE 60094.—Range 400 kc to 60 mc; resistance, 0-1,000 ohms ± 1 percent; reactance, 0-5,000 ohms at 1 mc, ± 2 percent.

(11) VARIABLE RESISTOR, TYPE RVINATFE-105B PER MIL-R-94A OR EQUIVALENT.—1 meg linear taper potentiometer.

c. LOCATING FAULTY UNIT.—Because each function of the transmitter bay is contained in a separate drawer, with facilities to extend the drawer and bypass the accompanying interlock, it is possible to maintain operation of the system and thereby simplify servicing. Defective operation can be traced to one drawer or another by noting the failure of one of its functions. The systematic location and repair of faults may be summarized as follows:

(1) determine which unit the fault is in;

(2) using the trouble location chart, servicing block diagram, schematic diagram, or the voltage and resistance chart, examine the unit in detail to determine which component failed and *why*;

(3) replace the defective component or components, or adjust correctly;

(4) check the equipment thoroughly.

TABLE 7-1. SYSTEM TROUBLE-SHOOTING CHART

ABBREVIATIONS OF MAJOR UNITS USED IN
THE SYSTEM TROUBLE SHOOTING CHART.

| | |
|------|--|
| RFA | RADIO FREQUENCY AMPLIFIER, (AM-1008/SRT) |
| LLRM | LOW LEVEL RADIO MODULATOR, (MD-229/SRT) |
| RFO | RADIO FREQUENCY OSCILLATOR, (O-275/SRT) |
| LVPS | LOW VOLTAGE POWER SUPPLY, (PP-1094/SRT) |
| MVPS | MEDIUM VOLTAGE POWER SUPPLY, (PP-1095/SRT) |
| HVPS | HIGH VOLTAGE POWER SUPPLY, (PP-1096/SRT) |
| HLRM | HIGH LEVEL RADIO MODULATOR, (MD-230/SRT) |
| MTG | BASE MOUNT (MT-1423/SRT) |
| ATU | ANTENNA TUNING EQUIPMENT |

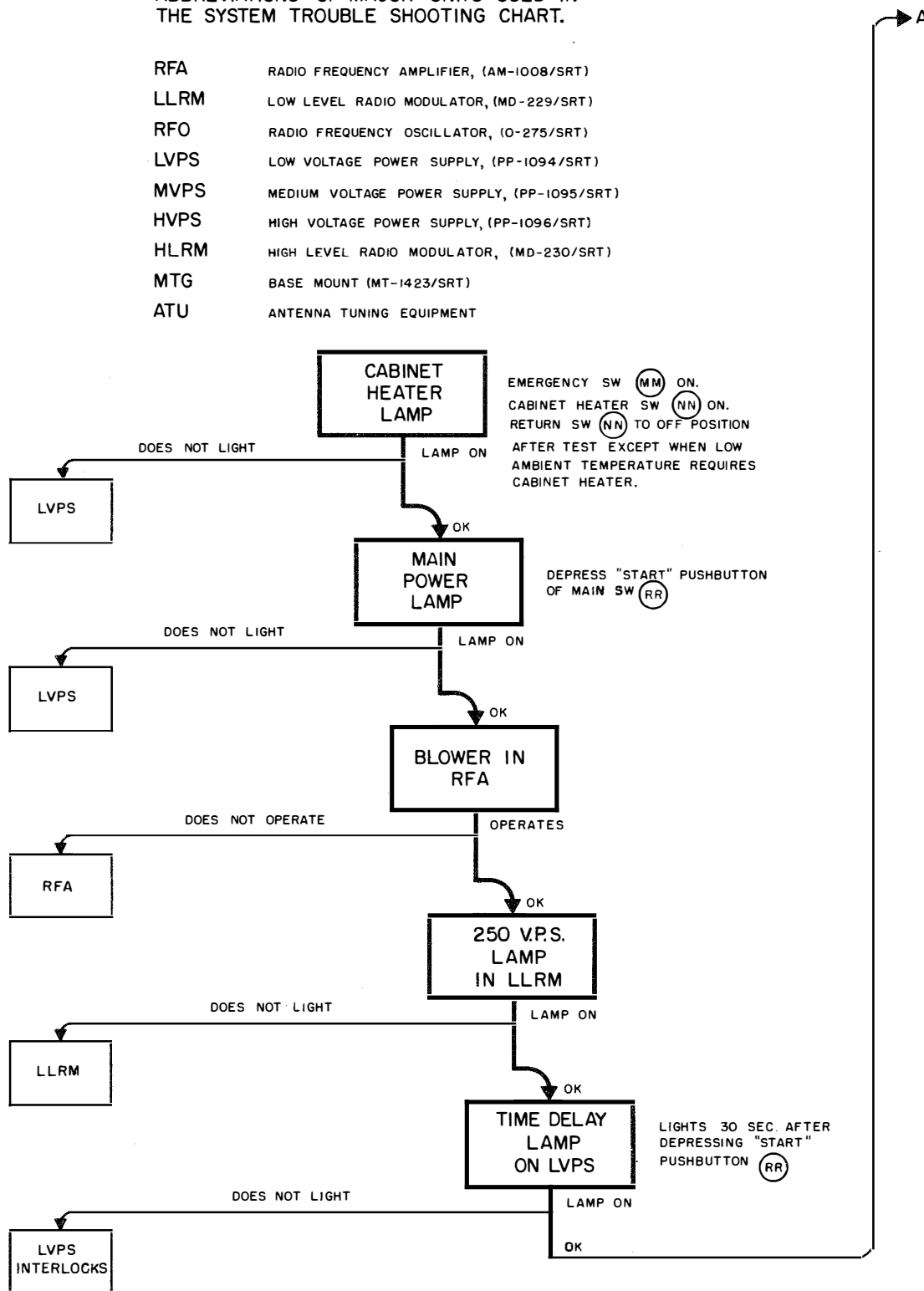


TABLE 7-1. SYSTEM TROUBLE-SHOOTING CHART (Cont'd)

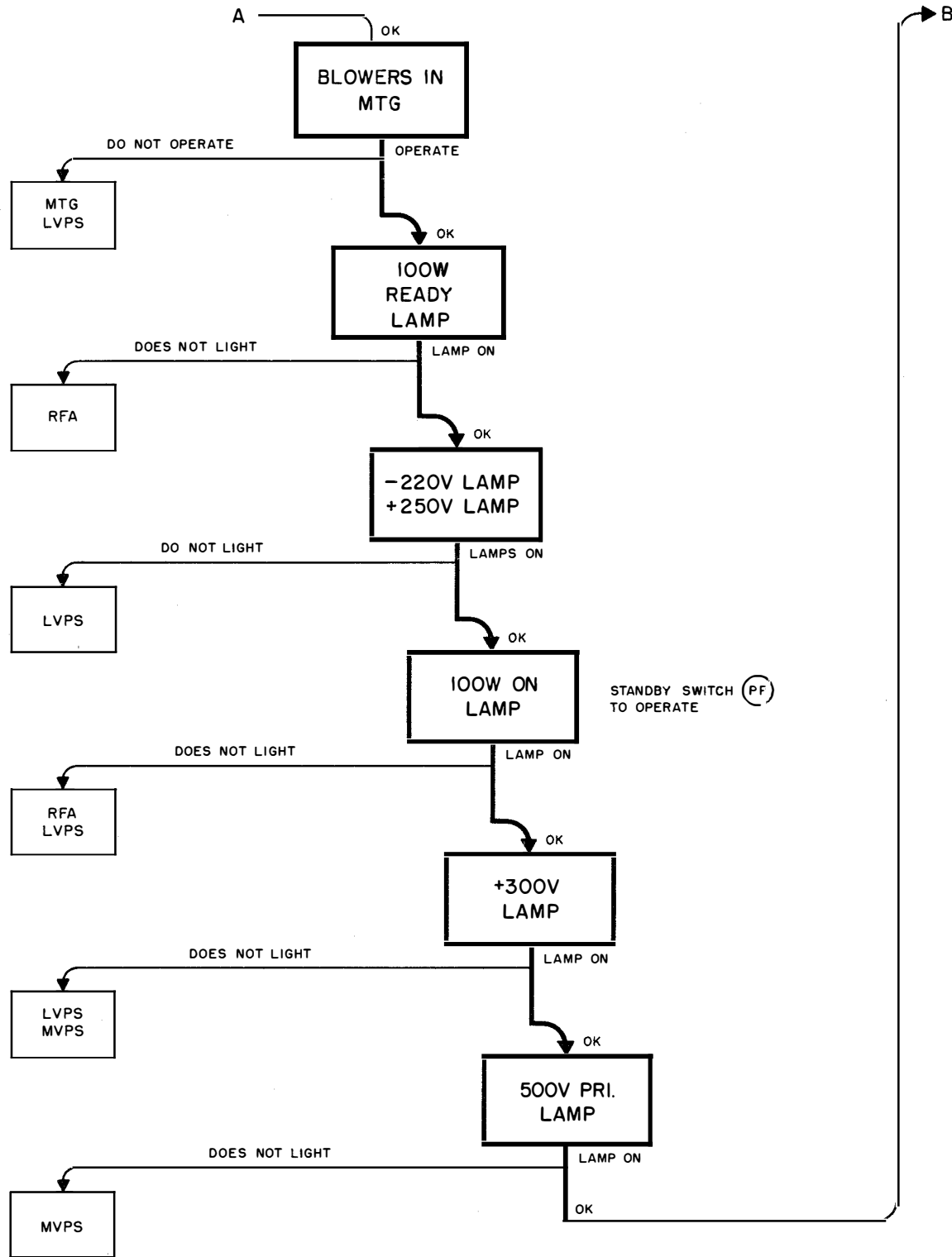


TABLE 7-1. SYSTEM TROUBLE-SHOOTING CHART (Cont'd)

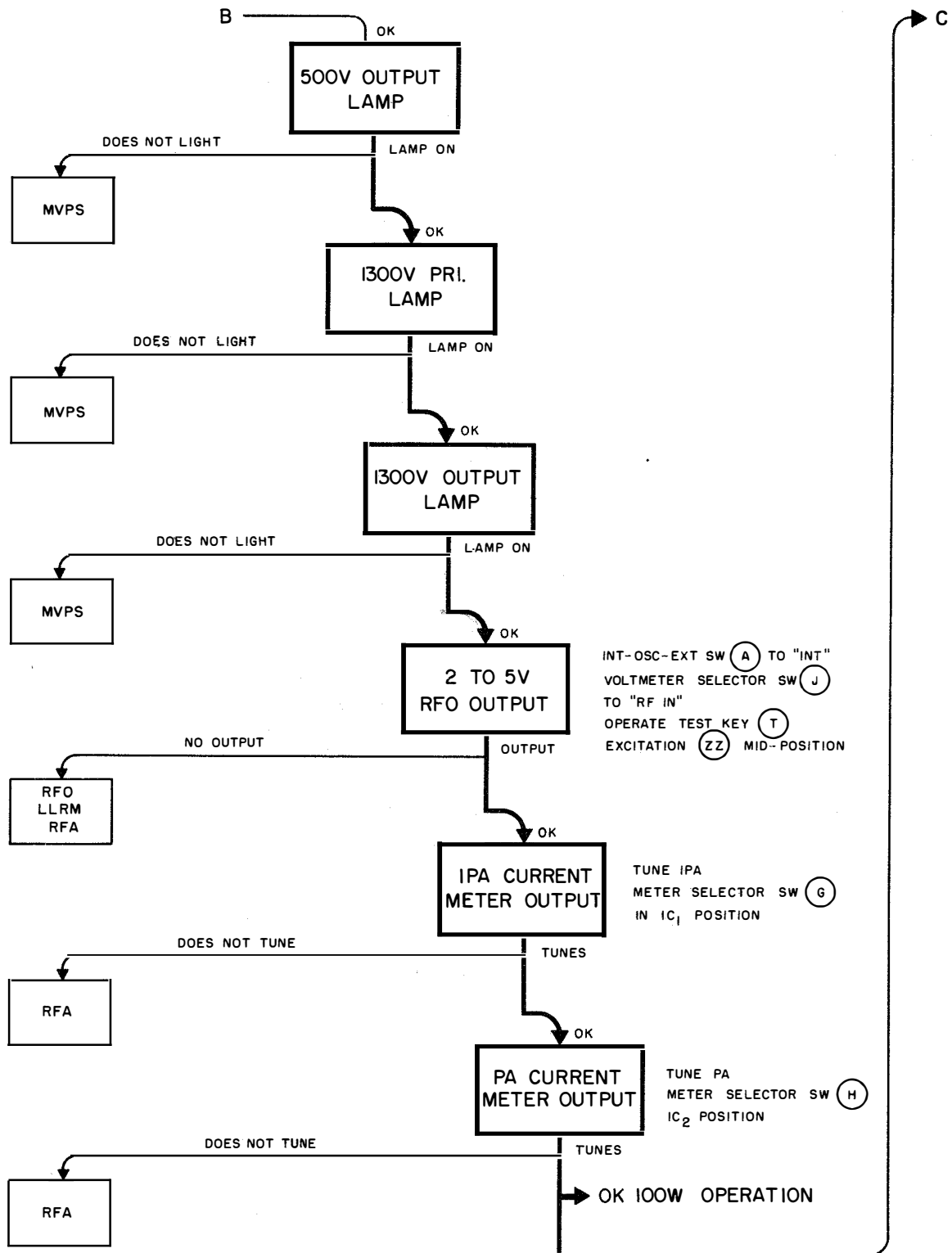


TABLE 7-1. SYSTEM TROUBLE-SHOOTING CHART (Cont'd)

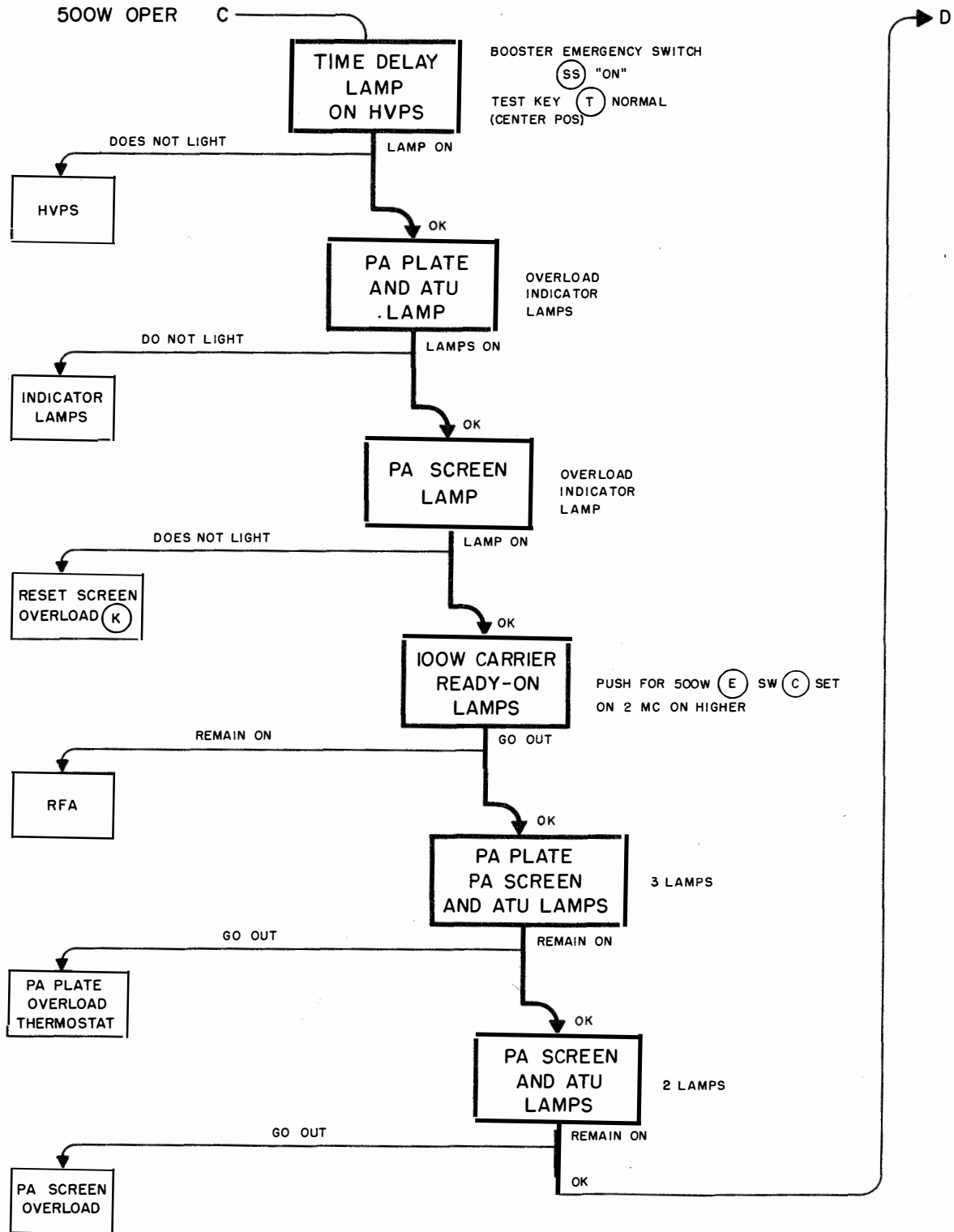
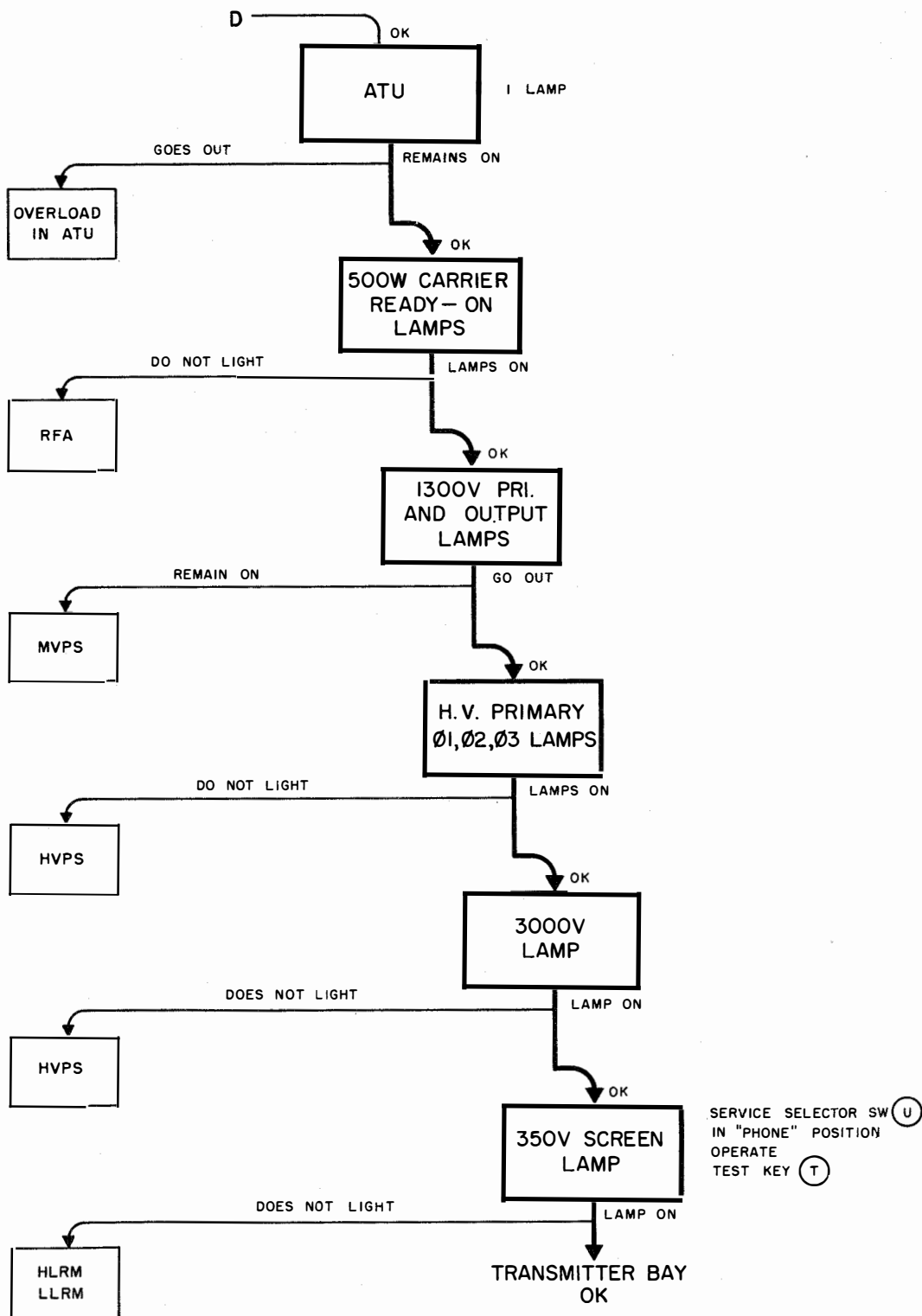


TABLE 7-1. SYSTEM TROUBLE-SHOOTING CHART (Cont'd)



4. TROUBLE-SHOOTING AND REPAIR OF THE MAJOR UNITS.

The units of the transmitter bay are discussed in the following paragraphs. Where warranted, a servicing block diagram, a schematic diagram, and a voltage and resistance chart accompany the discussion.

a. REMOVAL OF MAJOR UNITS.—Removal of major units in the transmitter bay can be accomplished as follows:

Step 1. Loosen captive screws on unit drawer front panel by means of hex wrench mounted on the low voltage power supply (LVPS) front panel. Pull chassis forward until inner slide latch hits stop on front of rail. To remove chassis from cabinet frame, remove two screws, one on each inner rail, that are now accessible. These screws are retainers for the inner slide latch in case of failure of latch spring.

Step 2. Now depress the latch on each inner slide and pull the chassis forward to clear the projection on the front of the rail.

Step 3. Disconnect associated cables and plugs from the chassis. Posts have been provided on the front of the transmitter cabinet to support the cabinet interconnecting plugs in the event of complete removal of a major unit. These posts support the plug when the major unit extension cable is used. Refer to Section 3 for the unit extension cable assembly instructions.

CAUTION

THE CHASSIS IS NOW FREE TO BE REMOVED ENTIRELY FROM THE CABINET. PERSONNEL REMOVING CHASSIS SHOULD NOW BE PREPARED TO SUPPORT THE ENTIRE WEIGHT OF THE CHASSIS.

Step 4. Pull the chassis forward until the inner slide disengages from the front rail roller, and the chassis will be completely free from the cabinet.

Step 5. Remove the outer protective cover panels by loosening the fasteners mounting the panels to the chassis assembly.

b. REPLACEMENT OF MAJOR UNITS.—Replace the unit drawer in the cabinet by reversing the sequence of the steps indicated for the removal of a major unit (paragraph 4a).

Step 1. Push the drawer in slowly until the drawer stops midway into position. Care must be taken to prevent drawer from hitting the interconnecting plug attached to the associated supporting post.

Step 2. Replace screws on inner rails. Remove interconnecting plug from its supporting post and connect to the receptacle provided on the rear of the drawer.

Step 3. Depress both left and right stops on drawer slides, and push the drawer in until it is properly seated into position.

Step 4. Tighten all the captive screws on the front panel.

Note

In the event a unit drawer is replaced by a new unit, it may be necessary to realign the support pins at the rear of the cabinet. If misalignment exists when installing a new unit drawer, refer to figure 7-90 and perform the following steps:

Step 1. Loosen the support pins at the rear of cabinet associated with drawer.

Step 2. Loosen the screws supporting the drawer front panel.

Step 3. Slide drawer in cabinet until properly seated.

Step 4. Tighten the rear support pins and all screws on the front panel.

5. RADIO FREQUENCY OSCILLATOR O-275/SRT (RFO), TROUBLE SHOOTING.

The radio frequency oscillator (RFO) is comprised of 14 plug-in units and a chassis consisting of a mounting rack for the 14 subunits. A frequency is set up by rotating knobs to the desired frequency in conjunction with the table mounted on the RFO front panel door to determine settings of Ⓐ and Ⓑ knobs. Figure 7-1 represents the RFO simplified block diagram.

When a frequency is set up but there is no RFO output as indicated on the radio frequency amplifier (RFA) VOLTMETER, with switch Ⓙ in RF IN position and EXCITATION control ⑦ fully clockwise, one or more of the RFO subunits or the cabinet interconnecting cable may be faulty. If the RFO output fails during transmission, the CARRIER ON light will remain ON, but the RFA panel mounted VOLTMETER with switch Ⓙ in the RF IN position will show zero output. The VOLTMETER should show an output of from 2 to 5 volts, depending on the setting of the EXCITATION control ⑦, also on the RFA front panel (figure 7-73).

If the RFA VOLTMETER shows no RFO output, perform the following procedure to localize the fault to a particular RFO subunit. When the faulty subunit is located, use the individual schematic diagram and voltage chart to locate the faulty component.

Note

To determine that the lack of RFO output is not due to the low level radio modulator (LLRM) keying circuit, check for output at RFO test socket E-2919 KEY V. IN (figure 7-6). With TEST KEY ⊕ in the center position, Multimeter ME-25A/U should read approximately -30 volts. With TEST KEY ⊕ operated, the meter should now read zero volts.

**CORRECTIVE
MAINTENANCE**

**NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A**

**Section 7
Paragraph 5**

After it has been determined that the LLRM keying circuit is operating properly, and there is still no RFO output, perform the following steps:

Step 1. Check units 11A (Z-2626), 11B (Z-2651), and 11C (Z-2801) by setting up three different frequencies—the first frequency in the range of 0.3 mc to 6 mc, the second frequency within 6 mc to 16 mc, and the third frequency within 16 to 26 mc, according to the settings of BAND knob (F). If only the second and third frequencies give an RFO output as indicated

on the RFA VOLTMETER with switch (J) in RF IN position, unit 11A (Z-2626) is probably at fault. If only the first and third frequencies give an RFO output, unit 11B (Z-2651) is probably at fault. If only the first and second frequencies give an RFO output, unit 11C (Z-2801) is probably at fault.

Step 2. Check for an RFO output during FSK and FAX operation. Place SERVICE SELECTOR switch (U) on the low level radio modulator (LLRM) front panel in the FSK and FAX positions alternately.

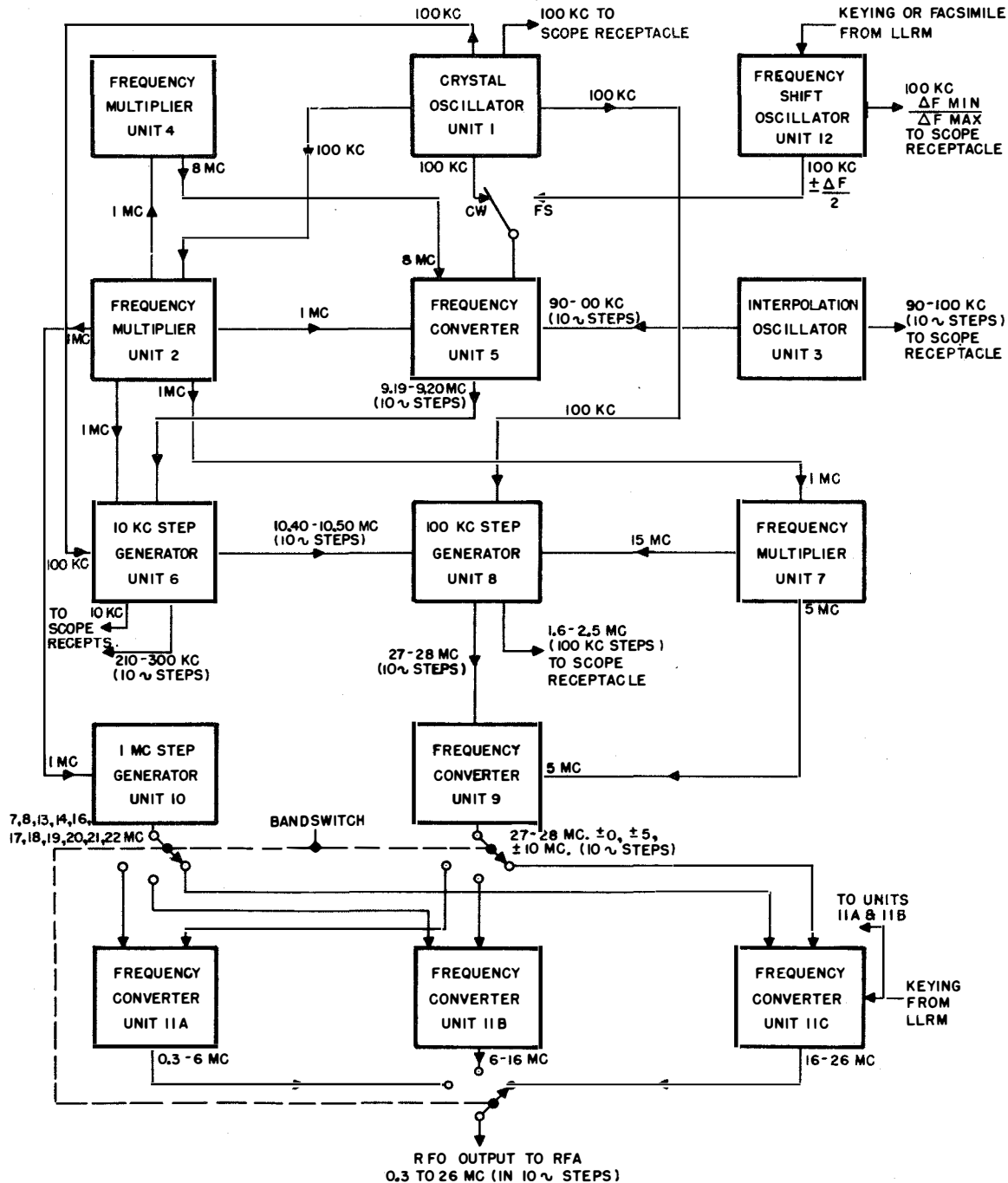


Figure 7-1. Radio Frequency Oscillator O-275/SRT, Block Diagram

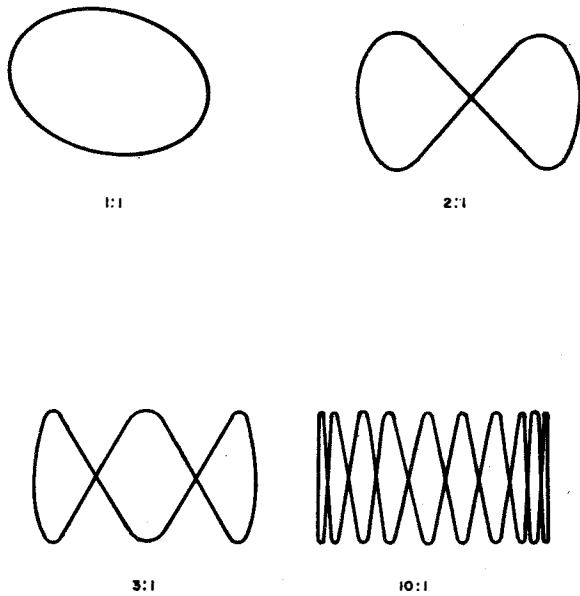


Figure 7-2. Typical Lissajous Patterns

If there is no RFO output during FSK operation, the radio frequency oscillator, unit 12, is probably at fault. If there is no RFO output from any of the output units, make the oscilloscope checks indicated in table 7-2 to locate the faulty unit:

Note

To check the frequency of any signal fed to the oscilloscope, use Lissajous patterns and try to get the smallest frequency ratio possible, preferably a 1:1 ratio. See figure 7-2 for typical Lissajous patterns.

Step 3. Check the 100-kc output of the crystal oscillator by means of an external oscilloscope such as the OS-8A/U or equivalent, connected to the 100

KC XTAL jack on the RFO front panel or by means of the WWV frequency check as indicated in paragraph 5c.

Note

The oscilloscope checks only the presence of an output from unit 1. It does not check the accuracy of the frequency.

Step 4. Check the 90- to 100-kc output of unit 3 by means of the ZERO BEAT INDICATOR, or with the oscilloscope (OS-8A/U or equivalent) connected to the INT. OSC. jack on the RFO front panel with ZERO ADJ switch (2) in the INT. OSC. position (paragraph 5g).

Step 5. Check the 10-kc output of unit 6 with the oscilloscope connected to the 10 KC jack on the front panel of the RFO (paragraph 5n).

Step 6. Check the 210- to 300-kc output of the phase-locked oscillator in unit 6 with the oscilloscope connected to the 10 KC STEP jack on the RFO front panel (paragraph 5o(1)(e)).

Step 7. Check the 1.6-mc to 2.5-mc output of the phase-locked oscillator in unit 8 with the oscilloscope connected to the 100 KC STEP jack on the RFO front panel (paragraph 5s).

Step 8. If only unit 1 gives an output among the signals checked in steps 3, 4, 5, 6 and 7, check the regulated filament voltage at test socket E-2919 pin 2 and the regulated +250 volts at test socket E-2919 pin 4 (see table 7-3). Test socket E-2919 is mounted on the left side of the RFO drawer and is accessible without removing the RFO protective panel.

Note

When checking for regulated filament and plate voltages, it is convenient to check all the pins on test socket E-2919.

TABLE 7-2. PRELIMINARY RFO CHECK BY MEANS OF EXTERNAL OSCILLOSCOPE

| OSCILLOSCOPE OS-8A/U | | LISSAJOUS PATTERN RATIO | SETTING OF RFO KNOBS (POSITION OF OTHER KNOBS IMMATERIAL) | | | | | | REFER TO FOLLOWING PARAGRAPHS FOR A DETAILED CHECK OF PROBABLE FAULTS |
|-----------------------|-----------------------|-------------------------|--|----|----|--------|--------|-----|---|
| "X" INPUT TO RFO JACK | "Y" INPUT TO RFO JACK | | ⒸⒸ | ⒹⒹ | ⒺⒺ | ⒻⒻ | ⒼⒼ | ⒿⒿ | |
| 10 KC | 100 KC X-TAL | 10:1 | | | | | | | 5d(1) and 5o(1) |
| 10 KC STEP | 100 KC X-TAL | 3:1 | | | | | 9 | | 5d(1) and 5o(1) |
| 10 KC STEP | 10 KC | 29:1 TO 21:1 | | | | | 8 to 0 | | 5o(1) |
| 100 KC STEP | 10 KC STEP | 8:1 | | | | 8 | 9 | | 5s(1) and 5o(1) |
| 100 KC STEP | 100 KC X-TAL | 25:1 TO 16:1 | | | | 9 to 0 | | | 5e(1) and 5o(1) |
| INT. OSC. | 100 KC X-TAL | 1:1 | 9 | 9 | 10 | | | | 5b(1) and 5d(1) |
| F.S. OSC. | 100 KC X-TAL | 1:1 | | | | | | 0 | 5e-1(1) and 5b(1) |
| F.S. OSC. | INT. OSC. | 1:1 | 9 | 8 | 0 | | | 200 | 5e-1(1) and 5b(1) |

CONDITIONS: EMERGENCY SWITCH (Ⓜ) ON, OPERATE-STANDBY switch (Ⓟ) on STANDBY, depress START on MAIN POWER switch (Ⓢ) and open frequency selection door on the RFO front panel.

TEST EQUIPMENT REQUIRED: Oscilloscope OS-8A/U, or equivalent.

TABLE 7-3. RFO TEST POINT SOCKET E-2919

| PIN NO. | READING |
|---------|---------------------|
| 1 | GND |
| 2 | 6.3 V A.C. REG |
| 3 | 6.3 V A.C. UNREG |
| 4 | 250 V DC REG |
| 5 | 250 V DC UNREG |
| 6 | -24 V AFTER T.D. |
| 7 | NC |
| 8 | KEY V. IN FROM LLRM |

Step 9. Check the RFO subunits in the given order, starting with unit 6, by measuring the voltages at the test points provided on each unit.

The radio frequency oscillator (RFO) simplified trouble-location diagram, figure 7-120, shows a method of localizing trouble in the RFO. This diagram indicates minimum r-f output measurements at the test points to indicate which unit is at fault.

Heavy blocks identify the unit (or units) and the associated test point. Lighter blocks identify units in which trouble may exist.

If the output of a unit is below the r-f voltage as indicated at the test point, follow the path to the left of the heavy block. If, however, the test point output is normal, then proceed to the right of the heavy block. When trouble has been localized to a unit, refer to the maintenance information pertaining to the particular unit.

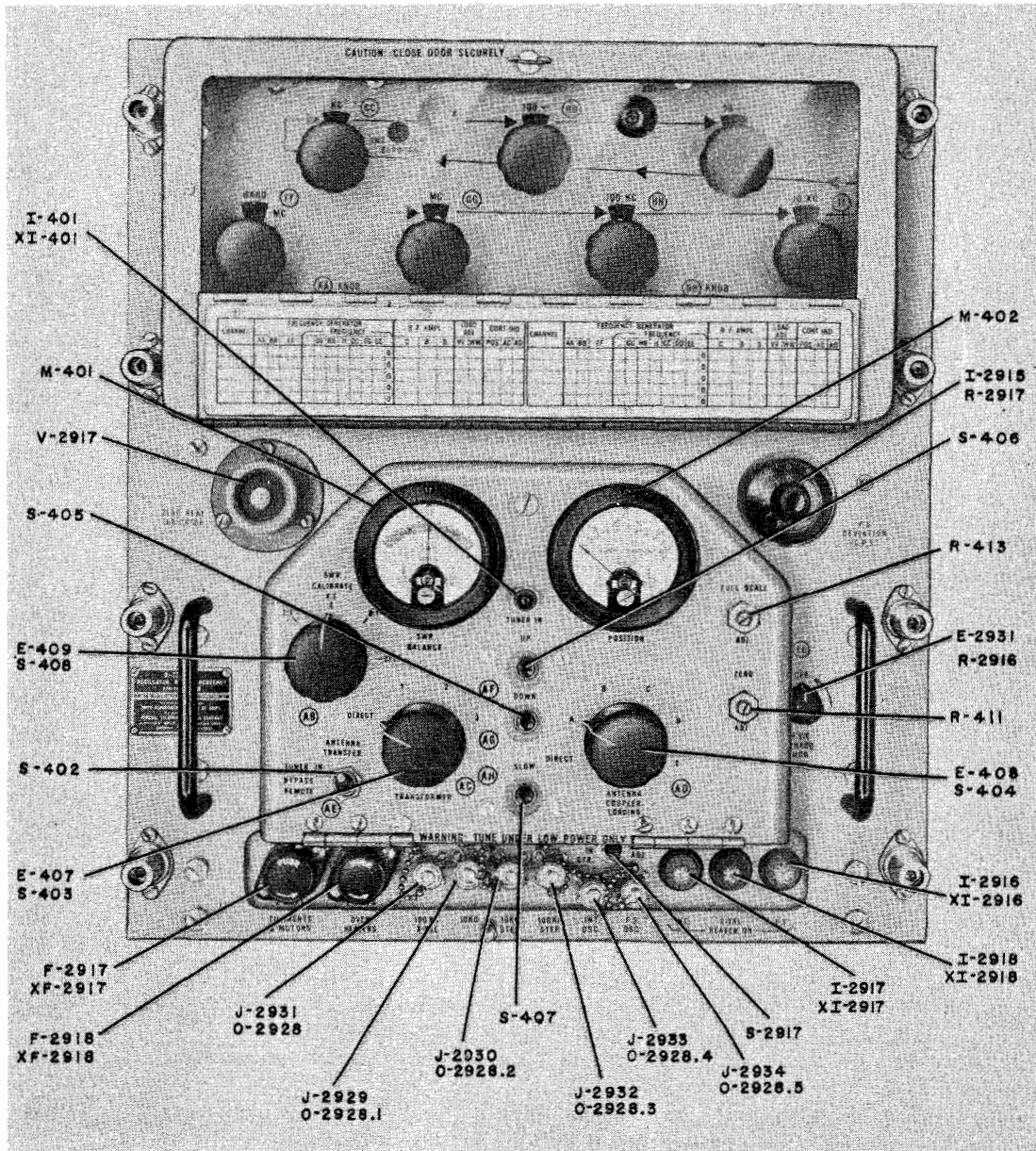
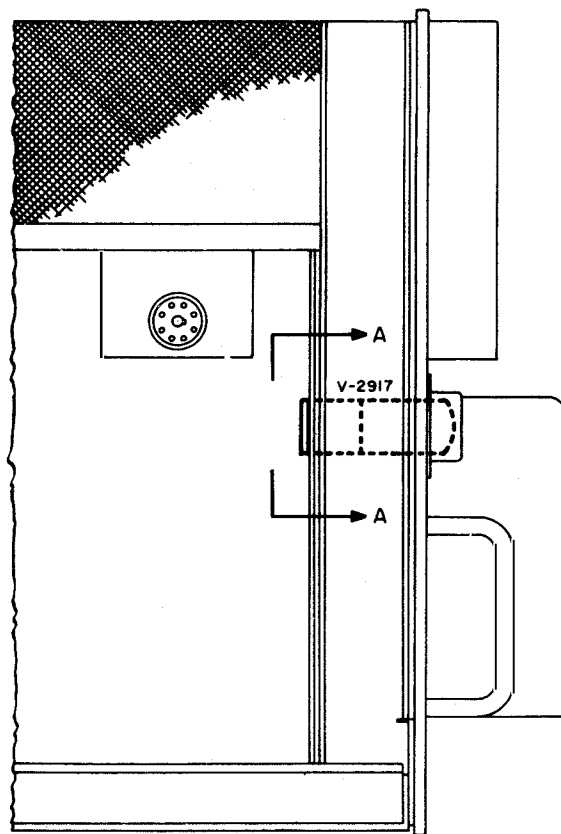
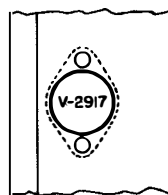


Figure 7-3. Radio Frequency Oscillator O-275/SRT and Control-Indicator C-1352/SRT, Front Panel



NOTES

1. MEASUREMENTS TO CHASSIS USING MULTIMETER ME-25A/U. USE THAT SCALE WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE, A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON THE 1 VOLT SCALE; A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON THE 250 VOLT SCALE.
2. TRANSMITTER IN STANDBY.
3. TEST KEY (T) IN CENTER POSITION.
4. SWITCH (Z) TO INT. OSC. POSITION.



SECTION A-A

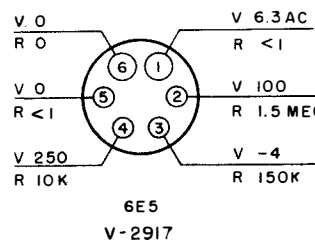


Figure 7-4. RFO, Unit 14 (Z-2901), Voltage and Resistance Chart

CAUTION

Low r-f output at unit 5 or 9 does not necessarily indicate trouble in the particular unit. A decrease in r-f output may be due to the lack of one of the inputs feeding these units.

Therefore, rather than realigning these units for an increase of r-f output, check the inputs fed to the mixer tubes on unit 5 or 9 at the pins on the tube socket itself.

Step 10. Check bandswitch labeled BAND (F) on the RFO panel for proper output (paragraph 5, step 1), and the cabinet interconnecting cable carrying the r-f output to the RFA.

When the faulty unit is located, use the troubleshooting and repair information for that particular unit.

a. RFO MOUNTING, UNIT 14 (Z-2901), TROUBLE SHOOTING.—The mounting contains the output chassis selector switch S-2996, V-2917, the 6E5 electron-ray tube, ZERO BEAT INDICATOR, fuses, test points, 6.3 v a-c filament supplies, RFO subunit drive mechanisms and the r-f interconnecting cables for the subunits (refer to figures 7-3, 7-5 and 7-10). When all the RFO subunits are operating properly but there is no indication of an RFO output on the RFA VOLTMETER with switch (J) in position RF IN, and switch (A) to INT position, check the output chassis

selector (S-2996) in the mounting (unit 14) and the r-f cable that connects the RFO output to the RFA.

If a unit is not receiving its input but the unit that supplies this input is operating, check the continuity of the coaxial cable between the units. If a frequency cannot be set up, check the voltage at test socket E-2919 and fuses on the front panel. Table 7-3 lists the RFO test points at socket E-2919 and nominal voltages. Figure 7-121 is the schematic, figure 7-122, sheets 1 and 2, the wiring diagrams, and figure 7-4 the voltage and resistance chart for unit 14.

b. RFO MOUNTING, UNIT 14 (Z-2901), REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—The regulated 6.3-volt a-c filament supply for the RFO is regulated by thermal resistor R-2929 in the primary of the regulated filament supply. This voltage may be checked at 6.3 V A.C. REG. on TEST POINTS socket E-2919, located on the left side of the RFO drawer. This socket is accessible without removing the protective side panel (figure 7-6).

To adjust the regulated filament voltage, remove the protective side panel (left) and adjust potentiometer R-2953, located in the upper left-hand corner of the RFO drawer (figure 7-6).

RANGE ADJ. (R-2919), ZERO ADJ. (R-2916), and F.S. DEVIATION (C.P.S.) control (K) (R-2917) are

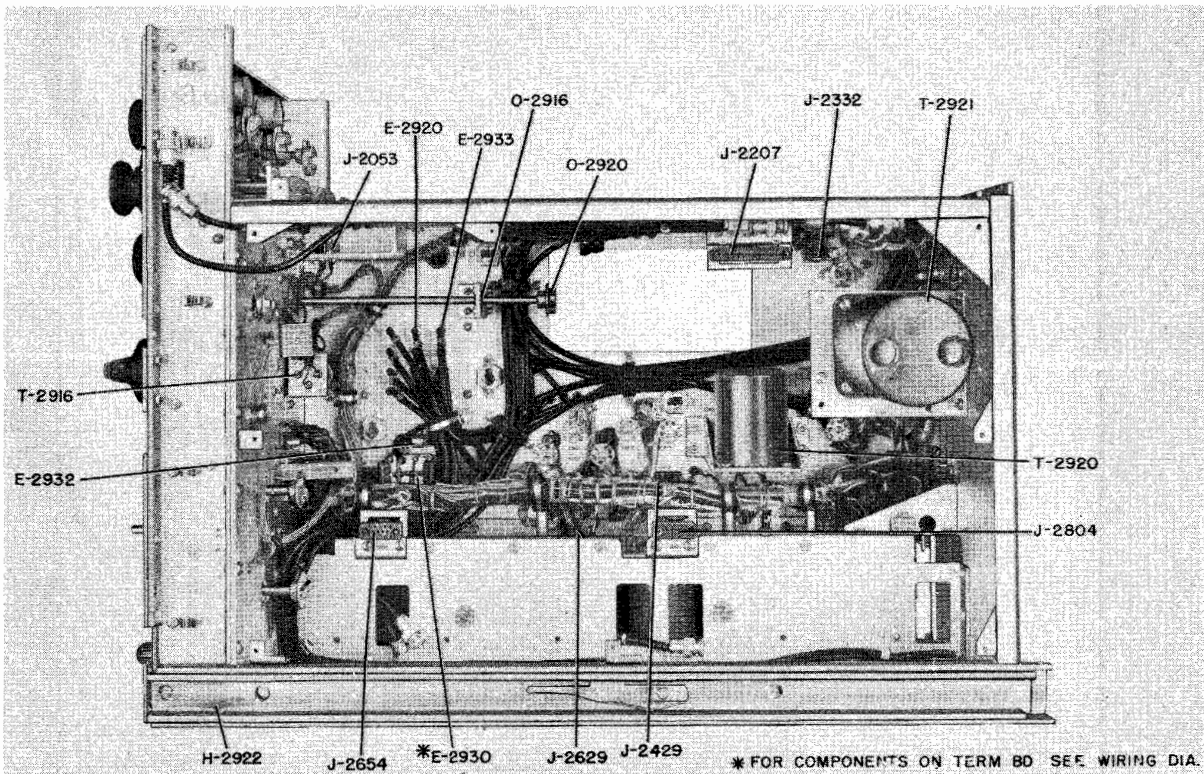


Figure 7-5. RFO, Unit 14 (Z-2901) Right Side View, Units Removed

adjusted when unit 12, radio frequency oscillator (Z-2127), is aligned. For a detailed procedure on the adjustment of the controls associated with unit 12, refer to paragraph 5ee(1).

F.S.K. PHASE MOD control (L) is a function of operation (Section 4, Operation), and is checked when the audio oscillator feedback control in the low level radio modulator (LLRM) is adjusted. Refer to paragraph 6b(1)(b)4.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—To remove the RFO drawer, unit 14, refer to paragraph 4a.

To gain access to the RFO subunits, electron eye V-2917, potentiometer R-2953, and bandswitch BAND (F) (S-2996), remove the protective cover plates.

Transformers on unit 14 are located on the right side of the chassis and are made accessible by first removing units 6 (Z-2204), 11B (Z-2651), and 11C (Z-2801) from the mounting (figures 7-5 and 7-7). The mounting plate supporting these three units must also be removed, by removing 13 machine screws holding it in place.

Subunits operated by means of shafts and/or chain drives and their respective control knobs are listed in table 7-4.

BAND knob (F) drives switch S-2996, which is part of the RFO mounting, unit 14, and is not considered a subunit.

TABLE 7-4. RFO FRONT PANEL CONTROL
KNOBS AND RESPECTIVE SUBUNITS

| KNOBS | KC (C) | MC (G) | 100 KC (H) | 10 KC (J) | (A) | (B) |
|----------|-----------------------|------------------------|--|-----------|---------|-----|
| | 100 ~ (D) 10 ~ (E) | | | | | |
| SUB UNIT | 3 | 11B (Bot) 11C (Bot) | 8 9 (Bot) 11B (Top) 11C (Top) | 6 | 9 (Top) | 10 |

To remove bandswitch S-2996, perform the following steps:

Step 1. Set BAND knob (F) on the RFO front panel to the 16-26 MC position.

Step 2. Remove the four screws supporting S-2996 to the RFO unit 14.

Step 3. Remove the bandswitch, being careful not to damage socket XV-2917, located on the inner front panel.

Step 4. Disconnect wires from bandswitch wafer S-2996A, and remove bandswitch S-2996.

For removing a subunit in the RFO, it is essential at all times that the subunit switch shaft be in position 0 as indicated by the position of red pointer on the subunit shaft. It will be found that when the above condition is met, the flexible coupler (figure 7-6) will be in a position to uncouple and the subunit can be

removed from the mounting (figures 7-6, 7-7, 7-8, and 7-9).

All subunit switch shafts are provided with flexible couplers adjacent to the inner front panel, directly behind the associated sprocket (figures 7-6 and 7-7). In the subunit 8 drive mechanism, however, adjustable bearings are provided on its drive shaft to compensate for variations in tolerances; this is a *factory adjustment*.

To remove a chain (figure 7-10) perform the following steps:

Step 1. Loosen setscrews on adjustable idler associated with chain.

Step 2. Remove keeper.

Step 3. Remove disconnect pin and tubular pin.

Step 4. Remove chain.

Note

In some cases, a chain with an adjustable idler may be removed without disassembly of chain.

1. REMOVAL OF CHAIN DRIVE SUBASSEMBLIES.

a. **ADJUSTABLE IDLER O-2922.** (See figure 7-10.)—Loosen the two setscrews on the associated idler arm.

b. **DRIVER SPROCKET.**—To remove a driver sprocket and shaft assembly, loosen setscrews on couplers associated with sprocket to be removed. Move couplers along shaft so that the retaining ring is accessible. Remove the retaining ring directly in the rear of the panel bearing. The sprocket and shaft assembly can now be removed.

Note

Special assembly pliers No. 0 and No. 22 manufactured by Waldes-Kohinoor Inc. are to be used in removing and replacing retaining rings.

c. **FIXED IDLER O-2929 AND O-2917.** (See figure 7-10.)—Remove retaining ring and slide idler sprocket from its shaft.

(b) REPLACEMENT AND ADJUSTMENTS.

—To replace the RFO drawer, unit 14, in the transmitter cabinet, refer to paragraph 4b, Replacement of Major Units.

Subassemblies and subunits may be replaced in the mounting (unit 14) by reversing the sequence of steps indicated for the removal of subassemblies and subunits.

Extreme care must be exercised in aligning unit 8 coupling drive shaft when replacing the shaft and coupling assembly. All subunits in the RFO mounting (unit 14) are mechanically coupled to the front panel control knobs by means of two-piece flexible couplers.

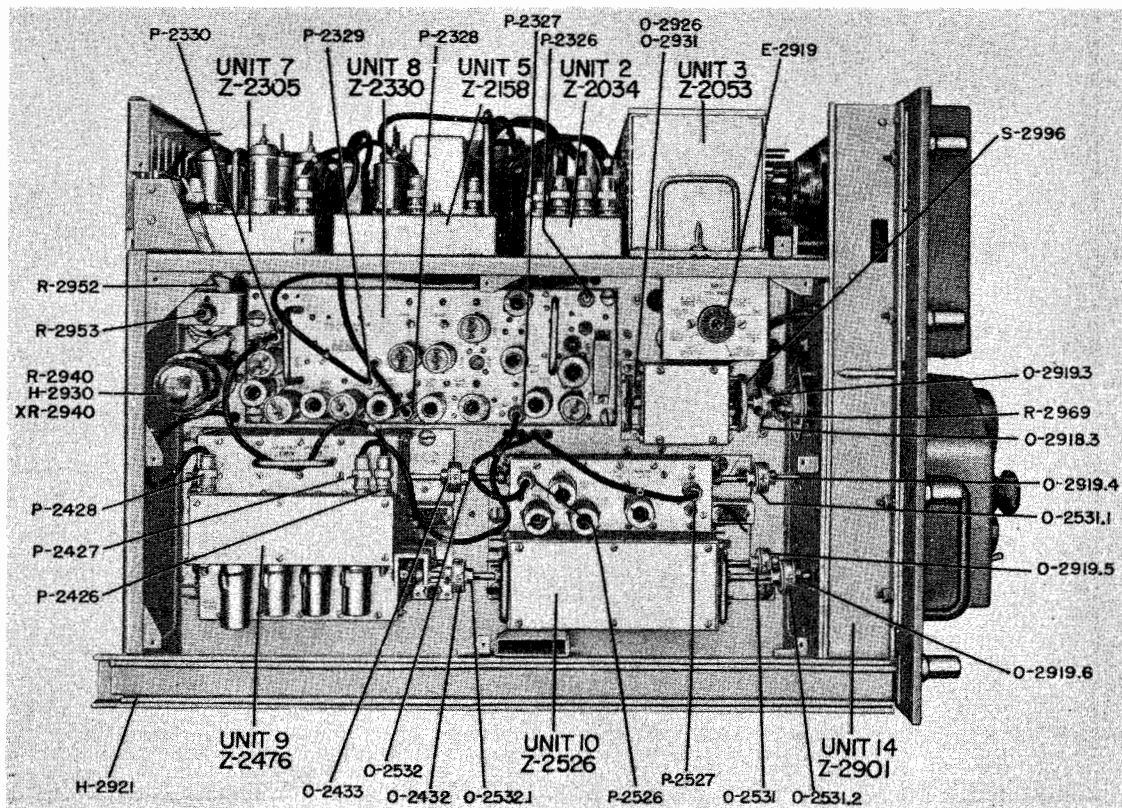


Figure 7-6. Radio Frequency Oscillator O-275/SRT, Covers Removed, Left Side View

These couplers compensate for variations in shaft alignment. Unit 8 has no flexible coupler, but is provided with adjustable bearings, to compensate for possible misalignment.

(c) CHAIN DRIVE.—Install a chain on unit 14 mounting in the following manner:

Step 1. Assemble chain (figure 7-10) and refer to Parts Lists, Section 8, for proper amount of links for individual chains.

Step 2. Place chain on sprockets.

Step 3. Adjust idler for proper tension.

Step 4. Tighten setscrews.

Note

Idler and chain tension *must always* be adjusted prior to tightening adjustable couplers.

c. RADIO FREQUENCY OSCILLATOR, UNIT 1 (Z-2001), TROUBLE SHOOTING.—The radio frequency oscillator (unit 1) has five 100-kc outputs. These r-f outputs can be measured at the test points by means of Multimeter ME-25A/U, or equivalent. (Use the probe for all r-f measurements.) If an output as indicated in table 7-5 is present, it can be assumed that

the oscillator is operating. Check the four other outputs (signals 1a, 1b, 1c, and 1d) of unit 1. See trouble location diagram, figure 7-120.)

TABLE 7-5. UNIT 1, R-F VOLTAGE AT TEST POINTS

| OUTPUT | JACK | UNIT | NOMINAL VOLTAGE |
|--------|--------------|------|-----------------|
| 1a | | 2 | 13.5 |
| 1b | | 5 | 0.3 min. |
| 1c | | 6 | 7.0 |
| 1d | | 8 | 13.5 |
| 1e | 100 KC X-TAL | 14 | 1.0 min. |

To check the r-f outputs of unit 1, the RFO drawer must be extended all the way out, the interlock bypassed, and OPERATE-STANDBY switch $\text{\textcircled{P}}$ in STANDBY position.

Output 1e may be checked at front panel jack 100-KC X-TAL.

If outputs 1a, 1c and 1e are present but outputs 1b and 1d are not, tube V-2003 (5814) is probably at fault. If none of the outputs of unit 1 are present, check the output of tube V-2001 (5654) by measuring the drive in the cathode follower tube V-2002A (5814).

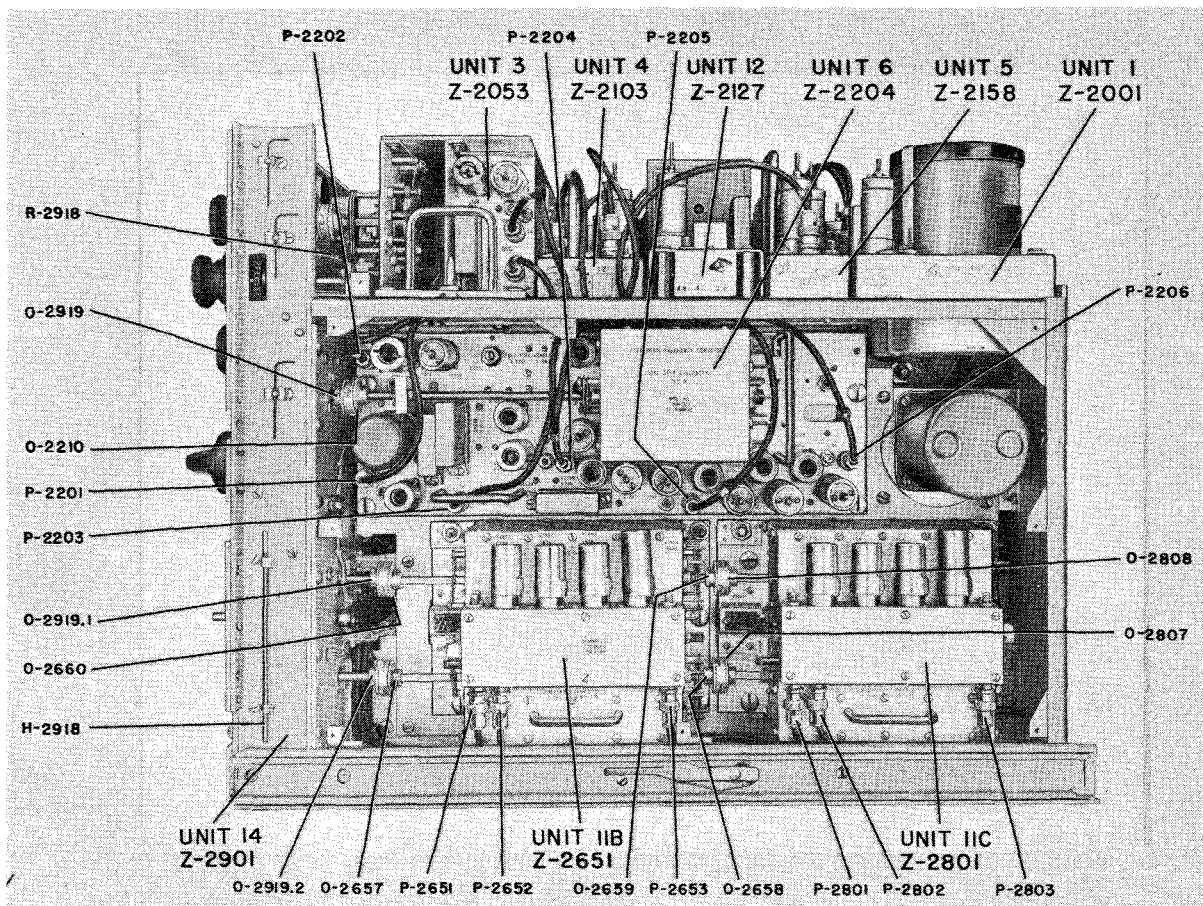


Figure 7-7. Radio Frequency Oscillator O-275/SRT, Covers Removed, Right Side View

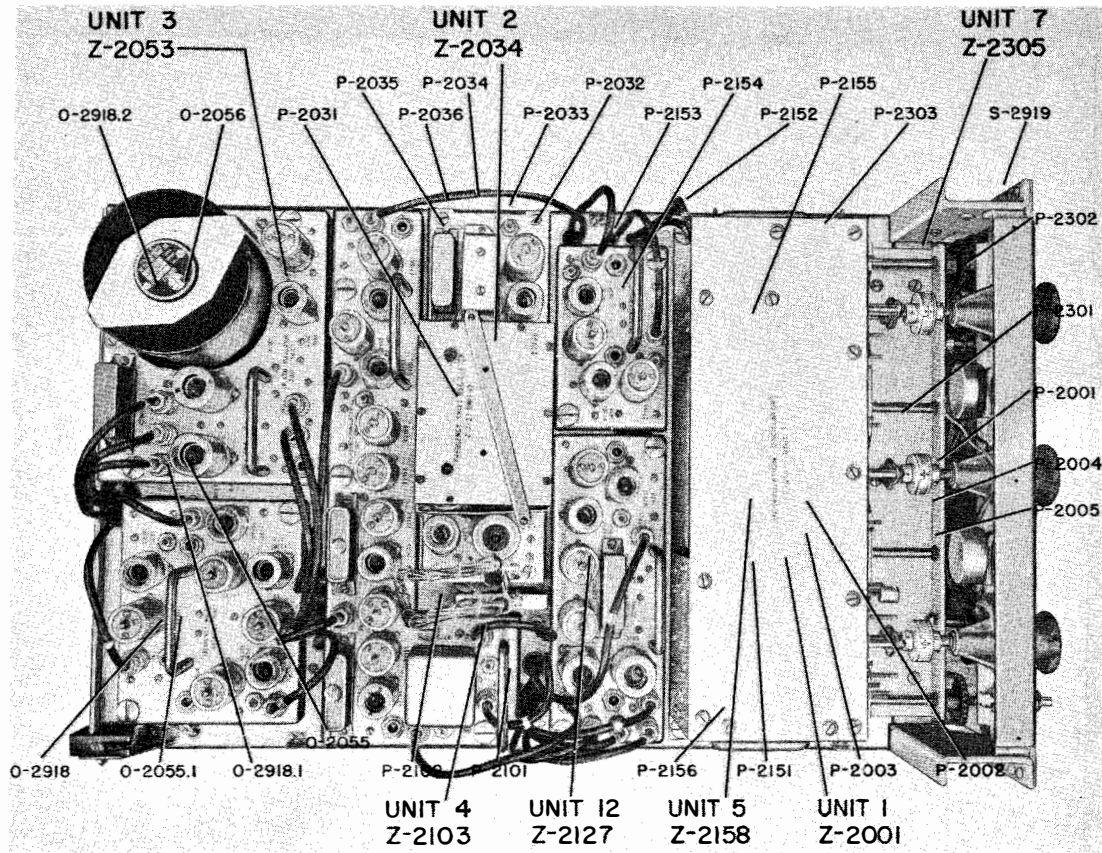


Figure 7-8. Radio Frequency Oscillator O-275/SRT, Covers Removed, Top View

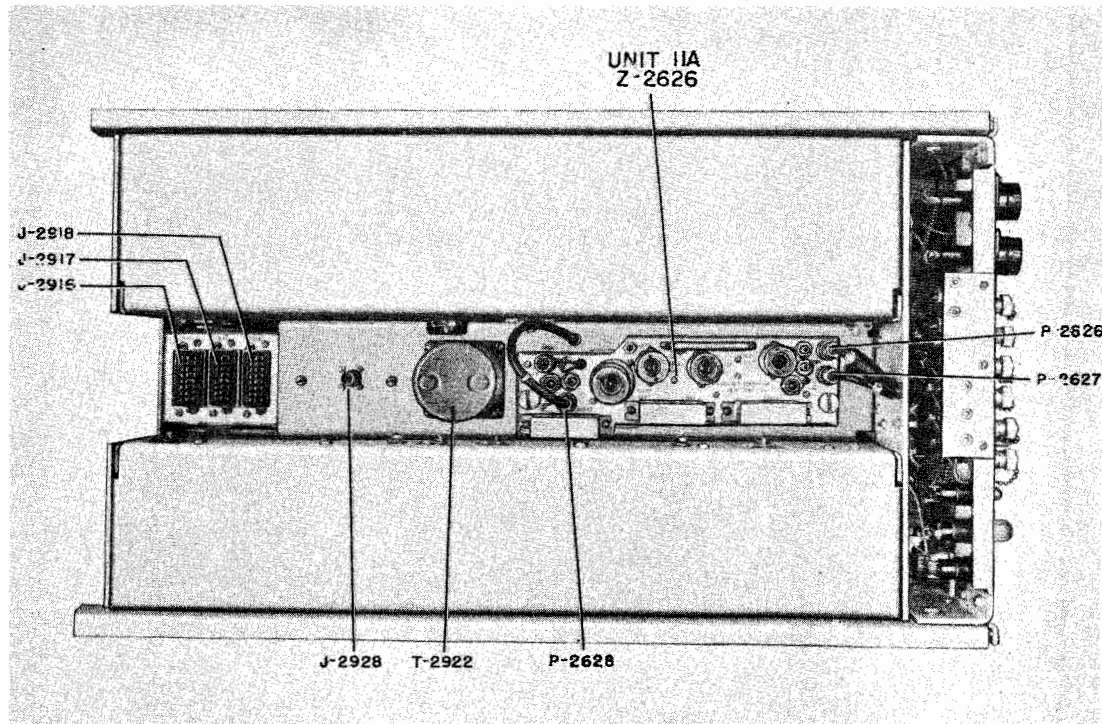


Figure 7-9. Radio Frequency Oscillator O-275/SRT, Bottom View

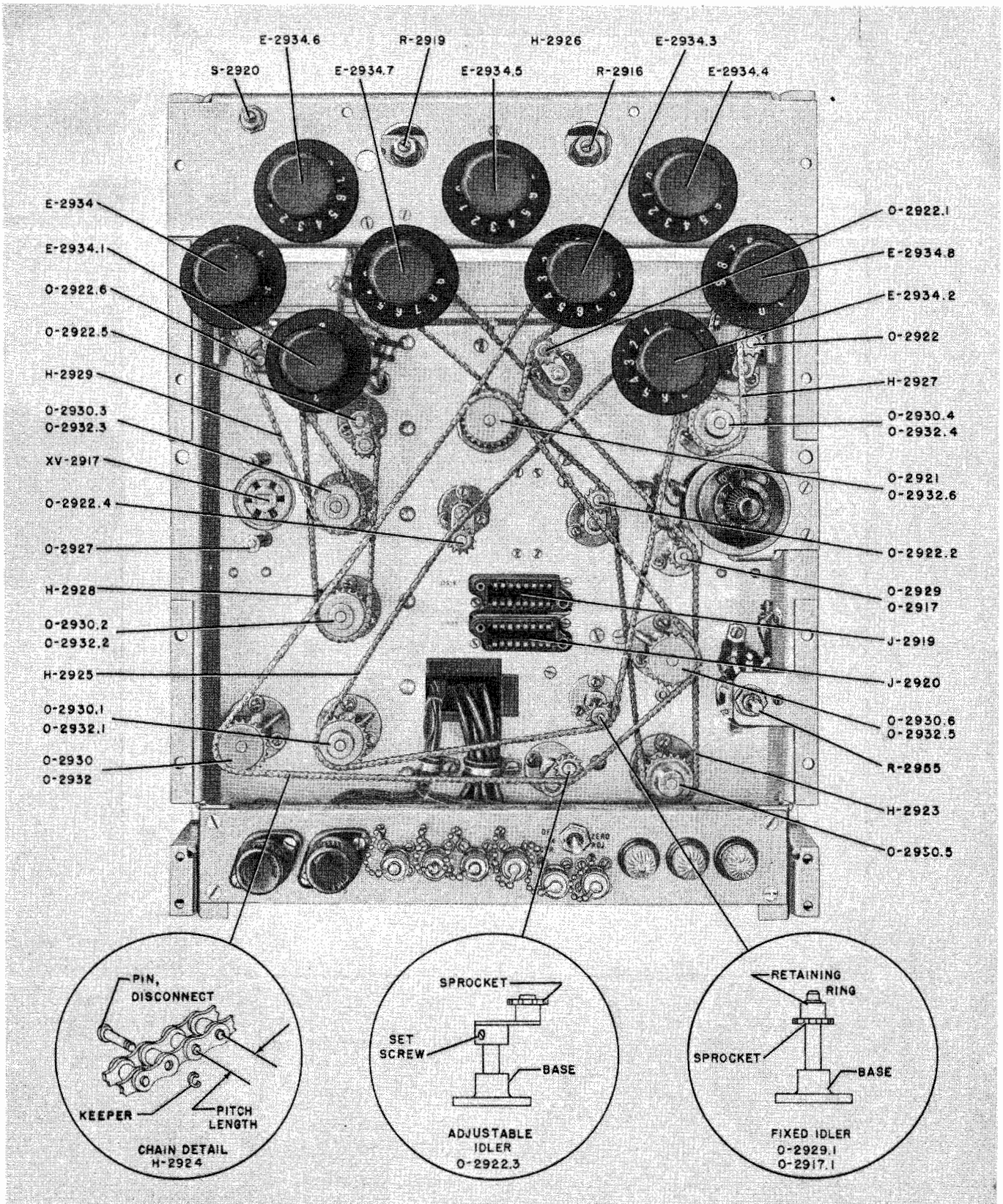


Figure 7-10. Radio Frequency Oscillator O-275/SRT, Front Panel Removed, Chain Drives

Note

Unit 1 must be placed on an extension test cable before this can be done.

If the oscillator tube V-2001 (5654) is operating, tube V-2002A (5814) is probably at fault. If tube V-2001 (5654) is not operating, check the tube and circuit (using the voltage and resistance chart, figure 7-11) and replace the defective component. Figure 7-123 is the schematic and figure 7-124 is the wiring diagram. Components in unit 1 are identified in figures 7-12 and 7-14.

d. RADIO FREQUENCY OSCILLATOR, UNIT 1 (Z-2001), REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—Only one adjustment should be made on unit 1. The top slug of inductance L-2001 (figure 7-12) should be adjusted when the output frequency of unit 1 is not 100 kc and whenever tube V-2001 (5654) is replaced.

Step 1. With transmitter in stand-by, switch Ⓢ in STANDBY, allow the RFO oscillator ovens to cycle for at least one hour.

Step 2. Tune a receiver (type RBB or equivalent) to 2.5 mc, connected to the ship's receiving antenna.

Step 3. Turn BFO on receiver front panel to "off".

Step 4. Connect a coaxial cable from 100 KC X-TAL jack on RFO front panel to the "T" type BNC connector (see figure 7-13) and terminate connector to the receiver antenna input.

Step 5. Measure the output signal of the 100 KC X-TAL 25th harmonic, on the receiver signal strength meter, and record.

Step 6. Connect the ship's receiving antenna with a variable resistor type RVINATFE105B per MIL-R-94A or equivalent in series, to the type "T" connector as shown in figure 7-13.

Step 7. Adjust the attenuator so that the signal from WWV is at the same level as recorded in step 5.

Step 8. With connections made as indicated in figure 7-13, adjust L-2001 on unit 1 (Z-2001) of the RFO, for a zero beat indication. L-2001, on unit 1, is accessible by extending the RFO drawer all the way out and cheating the RFO interlock. Refer to figure 7-12 for location of L-2001.

Step 9. Zero beat indication may be heard through the receiver speaker and observed visually by the indication on the receiver OUTPUT meter. The pointer on the OUTPUT meter will oscillate about the null, the frequency of this oscillation being the test frequency. At high beat frequencies, the meter pointer cannot respond and will remain at the null position. As the zero beat is approached, the pointer on the OUTPUT meter will begin to oscillate rapidly. Then, as tuning L-2001 towards zero beat is continued, pointer

movement slows down to an extremely slow movement or standstill.

Note

Perform zero beat adjustment only when frequency standard station WWV is not modulating.

In an AN/SRT-16, unit 1 of the other transmitter group may be used, if it is known to be operating properly, in place of the above check against station WWV, by adjusting the top slug of inductance L-2001 until a 1:1 Lissajous pattern is obtained on the oscilloscope. A Lissajous pattern may be obtained by connecting both 100 KC X-TAL outputs to the X and Y axes of the oscilloscope OS-8A/U (or equivalent). If a zero beat cannot be obtained by adjusting the top slug of inductance L-2001, place unit 1 on a subunit extension test cable and adjust the bottom slug of inductance L-2001.

CAUTION

The bottom slug of inductance L-2001 is a *factory adjustment* and should *not* be tampered with unless absolutely necessary.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—Unit 1 may be removed by turning the two 1/4-turn cowl fasteners and removing the five cables connected to the chassis. The handle should be used to pull the chassis from the mounting.

CAUTION

When removing unit 1, pull handle slowly and straight out so as not to bend any of the pins on the connecting plug.

To remove the crystal oven plug-in unit, loosen the two screws holding the metal bracket and remove bracket. The crystal oven can now be removed by pulling it from the socket.

The following steps should be taken to remove the thermostat in the crystal oven plug-in unit:

Step 1. Remove three screws on top rim of oven.

Step 2. Lift off top cover and remove layer of spun glass insulation and crystal cover.

Step 3. Lift out bakelite centering ring and remove three screws around rim of socket end of the oven assembly.

Note

When a Bliley crystal is used in unit 1, it may be necessary to push out three threaded pins that hold the bakelite ring before removing the bakelite spacer ring. When a James Knight crystal is used, there is a slight opening where the ring fits the aluminum crystal

NOTES

1. ALL MEASUREMENTS TO GROUND UNLESS OTHERWISE INDICATED.
2. READINGS TAKEN WITH MULTIMETER ME-25A/U, VOLTAGE READINGS D-C UNLESS OTHERWISE INDICATED. USE THAT SCALE WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE, A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON A ONE VOLT SCALE; A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON A 250 VOLT SCALE.
3. TEST KEY (T) IN CENTER POSITION.
4. TRANSMITTER IN STANDBY.
5. RFO FREQUENCY SET AT 2 MC. BAND SWITCH (FF) AT .3-6 MC POSITION.

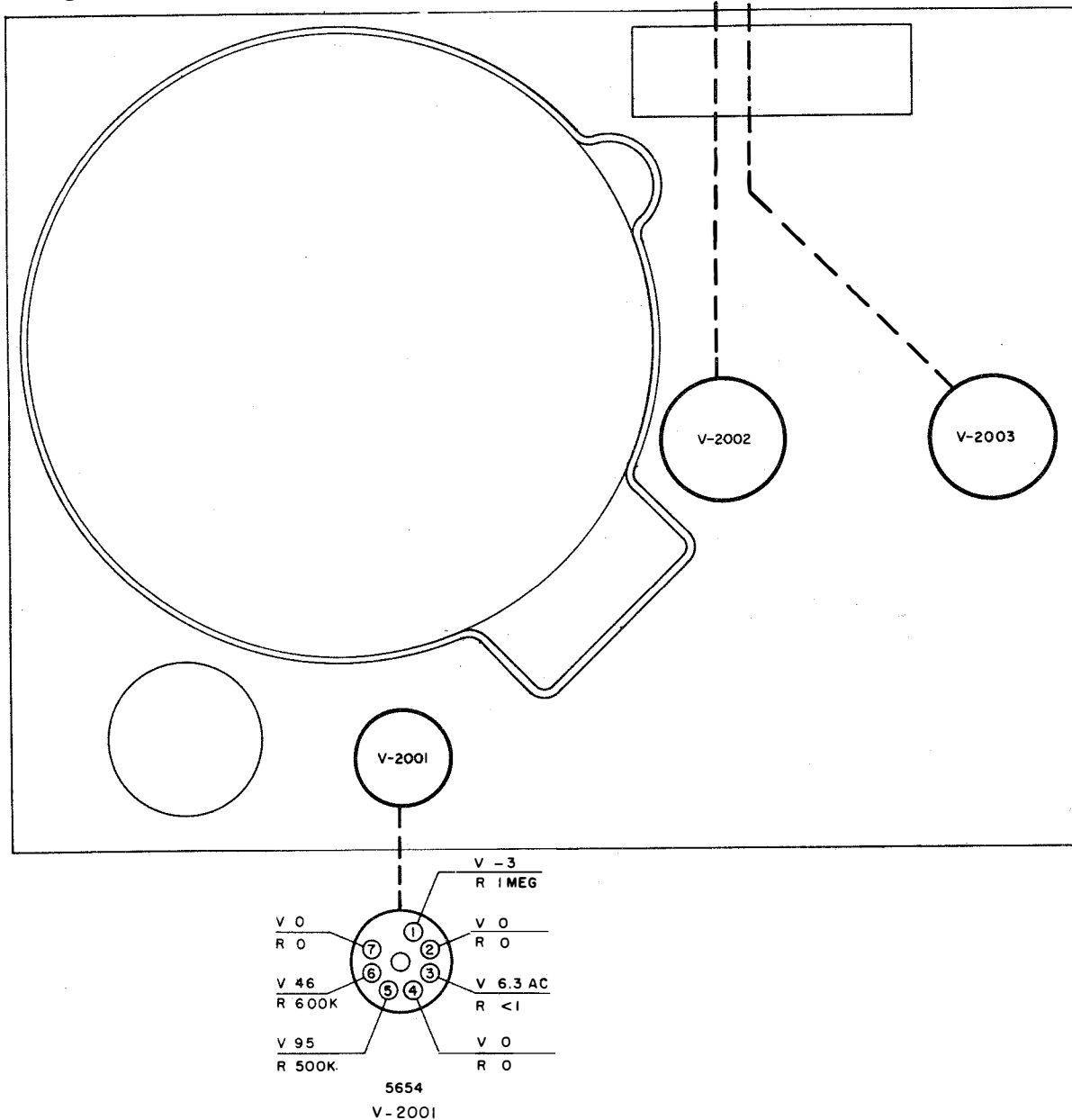
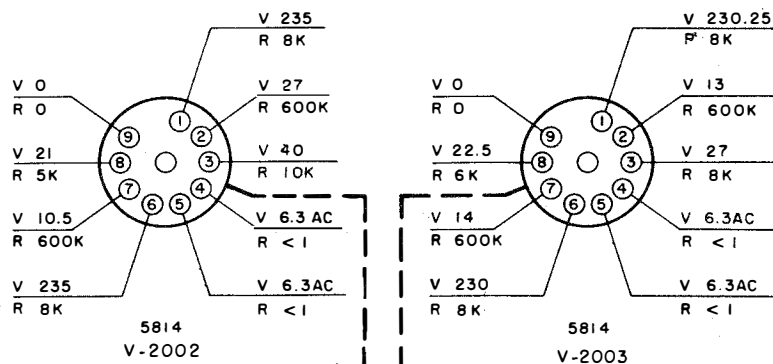


Figure 7-11. RFO, Unit 1 (Z-2001), Voltage and Resistance Chart

housing which allows the use of a screwdriver to be inserted to permit lifting of the bakelite spacer ring.

Step 4. Carefully remove exterior housing and pad of spun glass insulation.

Step 5. Carefully remove thin strip of spun glass insulation at base of the assembly.

Step 6. The thermostat is now accessible and may be removed. Mark connections so that they may be replaced in the same manner in which they were originally installed.

(b) REPLACEMENT AND ADJUSTMENTS.—

To replace the crystal oven, plug it into its socket, replace the bracket, and tighten the two screws that attach the bracket to the chassis. The crystal oven has seven pins, two of which are larger than the other five. Make sure pins are lined up properly before replacing oven in its socket. To replace unit 1, line up the two chassis guide holes on unit 1 with the chassis guide pins on unit 14 mounting. Push unit 1 down slowly until it is properly seated in position and tighten the two cowl fasteners. Connect the five cables to the proper jacks on unit 1.

CAUTION

Do not force unit 1 into position. Forcing may cause the pins on its connecting plug to be damaged.

Note

When replacing unit 1 with a new unit 1, it may be necessary to loosen the power plug mounting screws and the chassis guide bushing nuts to effect proper alignment on unit 14 mounting. After proper alignment, be sure to tighten the power plug screws and guide bushing nuts.

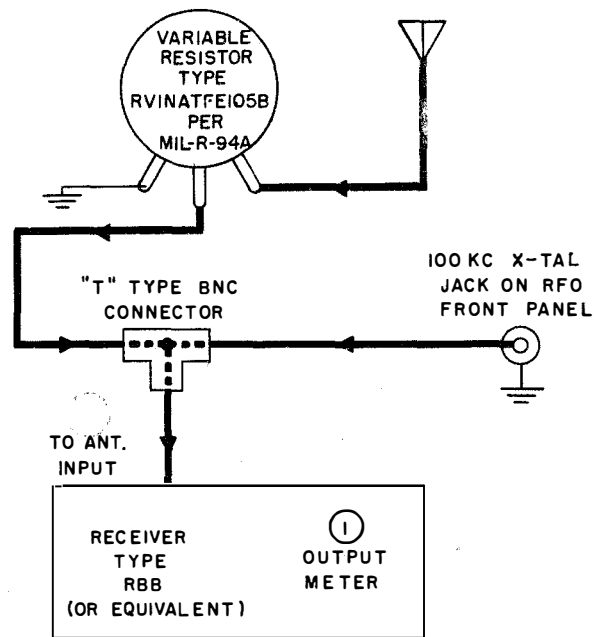


Figure 7-13. RFO Frequency Check, Test Setup

*e. FREQUENCY MULTIPLIER, UNIT 2 (Z-2034), TROUBLE SHOOTING.—*The frequency multiplier (unit 2) has five 1-mc outputs. (See trouble location diagram, figure 7-120.)

These r-f outputs can be measured at the test points by means of Multimeter ME-25A/U, or equivalent. (Use the probe for all r-f measurements.) Table 7-6 indicates r-f measurements at test points on unit 2.

To check the r-f outputs of unit 2, the RFO drawer must be extended, the interlock bypassed and OPERATE-STANDBY switch (P) placed in STANDBY.

TABLE 7-6. UNIT 2, R-F VOLTAGE AT TEST POINTS

| OUTPUT | UNIT | NOMINAL VOLTAGE |
|--------|------|-----------------|
| 2a | 4 | 8.7 |
| 2b | 5 | 1.2 |
| 2c | 6 | 1.2 |
| 2d | 7 | 8.7 |
| 2e | 10 | 8.7 |

The one input to unit 2 (signal 1a) can be checked at J-2038 on unit 2. If only signals 2e and 2d are present in the output, tube V-2033 (5814) is probably at fault. If only signals 2b, 2c and 2a are present, tube V-2034 (5814) is probably at fault. If no output signal is present, use the trouble location diagram, figure 7-120, schematic, figure 7-125, wiring diagram, figure 7-126, and voltage and resistance chart, figure 7-15.

f. FREQUENCY MULTIPLIER, UNIT 2 (Z-2034), REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—In unit 2, the six adjustments that can be made are the top and

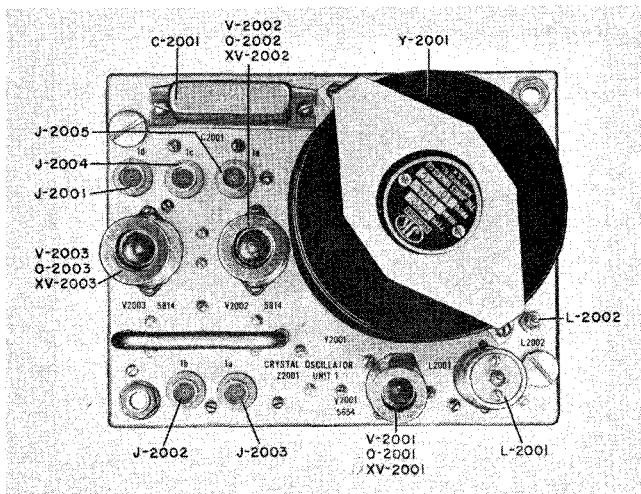


Figure 7-12. RFO, Unit 1 (Z-2001), Top View

bottom slugs of Z-2031, Z-2032, and Z-2033. Refer to figures 7-16 and 7-17.

WARNING

These six adjustments are *factory adjustments* and should *not* be tampered with unless a transformer is replaced or an adjustment has become loose.

Unit 2 is located on the top of the RFO mounting (figure 7-8) and the top slugs of Z-2031, Z-2032, and Z-2033 may therefore be adjusted without removing unit 2 from the mounting. The RFO drawer must be pulled all the way out and the top protective cover removed in order to make these adjustments.

Step 1. Place equipment in stand-by condition, OPERATE-STANDBY switch (P) in STANDBY position.

Step 2. Bypass the RFO interlock.

Step 3. Connect Multimeter ME-25A/U, or equivalent, to output 2a, using the r-f probe, and set meter on 15.0-volt scale.

Step 4. Adjust the top slugs of Z-2031, Z-2032, and Z-2033 for a maximum reading on Multimeter ME-25A/U.

Step 5. Connect unit 2 to a subunit extension test cable and adjust the bottom slugs of Z-2031, Z-2032, and Z-2033 for maximum reading on Multimeter ME-25A/U.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—Unit 2 may be removed by turning the two 1/4-turn cowl fasteners and removing the six cables connected to the chassis. Use the handle to remove unit 2 from the mounting.

CAUTION

When removing unit 2, pull handle slowly and straight out so as not to bend any of the pins on its connecting plug.

(b) REPLACEMENT AND ADJUSTMENTS.—To replace unit 2, line up the chassis guide holes on unit 2 with the chassis guide pins on unit 14. Push unit 2 slowly until it is properly seated in position, and tighten the two cowl fasteners. Connect the six cables to the proper jacks on unit 2.

CAUTION

Do not force unit 2 into position. Forcing may cause the pins on its connecting plug to be damaged.

Note

When replacing unit 2 with a new unit 2, it may be necessary to loosen the power plug mounting screws and the chassis guide bushing nuts to effect proper alignment on unit 14

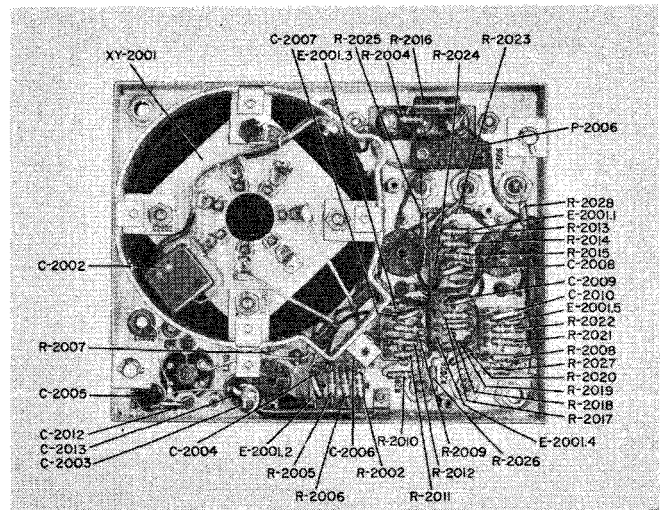


Figure 7-14. RFO, Unit 1 (Z-2016), Cover Removed, Bottom View

mounting. After proper alignment, be sure to tighten the power plug screws and guide bushing nuts.

No adjustments are required on unit 2 unless Z-2031, Z-2032, or Z-2033 is replaced. When replacing any one of these transformers adjust its top and bottom slugs as indicated in paragraph 5f(1).

g. RADIO FREQUENCY OSCILLATOR, UNIT 3 (Z-2053), TROUBLE SHOOTING.—The interpolation oscillator, unit 3 (figures 7-18, 7-19 and 7-20), is the most critical unit in the RFO. Extreme care should be taken to prevent changing the variable inductors during servicing. In the event that tests indicate that unit 3 is in need of alignment, always attempt to zero the unit with the INT. OSC. ZERO ADJ. (front panel) as described in paragraph 5 b (1) (a). If this control does not bring unit 3 into alignment, check unit 1 alignment as indicated in paragraph 5 d (1) before deciding the trouble to be in unit 3.

Unit 3 has two outputs (3a and 3b) of 90 to 100 kc in 10-cps steps. These frequencies are set up manually by means of the RFO front panel knobs (C), (D), and (E). Unit 3 output frequency can be checked on the ZERO BEAT INDICATOR and adjusted as indicated in paragraph 5 b (1) (a).

If there is no output from unit 3, check r-f voltage at jack INT. OSC. on RFO front panel. Use Multimeter ME-25A/U (or equivalent) with r-f probe; the reading should be approximately 0.2 volt. Use the trouble location diagram, figure 7-120, and refer to unit 3 schematic diagram, figure 7-127, the wiring diagram, figure 7-128, and the voltage and resistance chart, figure 7-21, to locate the fault.

b. RADIO FREQUENCY OSCILLATOR, UNIT 3 (Z-2053), REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—All adjustments on unit 3 are factory adjustments with the ex-

ception of INT. OSC. ZERO ADJ. L-2080. The factory adjustments should not be tampered with unless the adjustable component has been changed or complete alignment is required because of poor operation of the unit indicated by Lissajous patterns from frequency comparison and the minimum r-f voltage measurements using the RFO trouble location diagram.

taken to replace components in Z-2052 so that the combination of capacitors used to replace a component is of the exact same value as the components being replaced.

CAUTION

Combinations of precision capacitors are used in assembly Z-2052 and extreme care must be

(a) INTERPOLATION OSCILLATOR ZERO ADJUST L-2080.—Whenever oscillator tube V-2051 is replaced, it generally throws unit 3 out of alignment. The step accuracy of the 1,000-, 100- and 10-cycle switches (S-2051, S-2052 and S-2053 respectively) is retained, and all that need be done is to zero the INT.

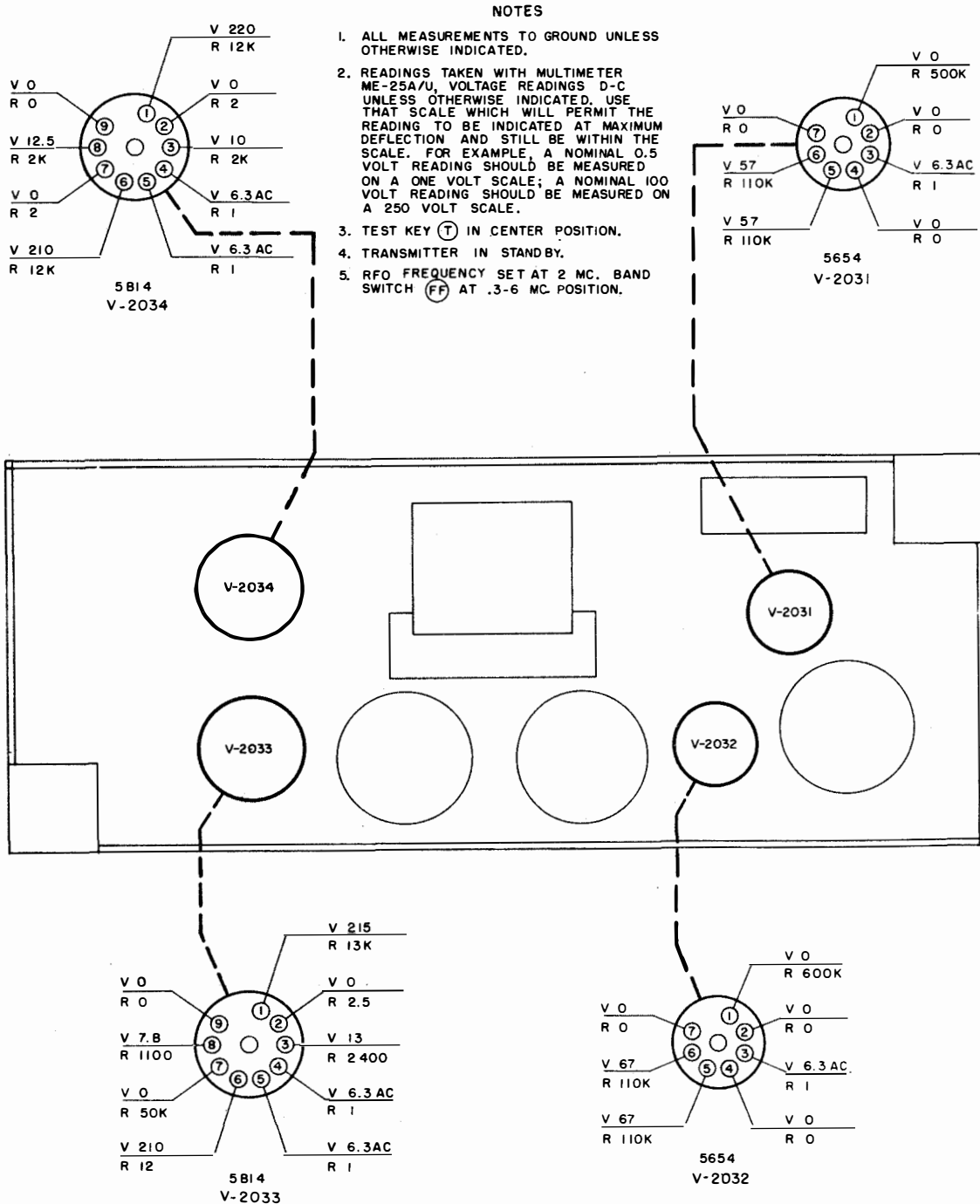


Figure 7-15. RFO, Unit 2 (Z-2034), Voltage and Resistance Chart

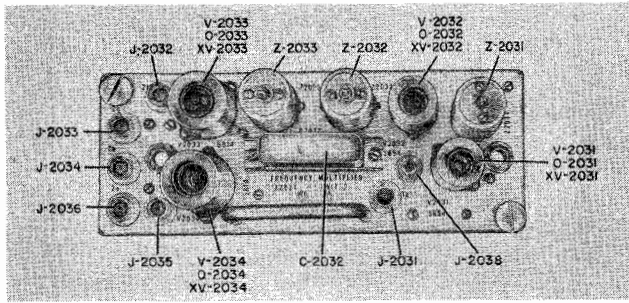


Figure 7-16. RFO, Unit 2 (Z-2034), Top View

OSC. ZERO ADJ. This adjustment can be made without removing the RFO drawer, as follows:

Step 1. Allow oscillator ovens to cycle for one hour (i.e., oven indicators blinking on and off).

Step 2. Place equipment in a stand-by condition, OPERATE-STANDBY switch (P) in the STANDBY position.

Step 3. Turn the KC knob (C) to position 9, the 100-cycle knob (D) to position 9, and the 10-cycle knob (E) to position 10. This sets the output frequency of unit 3 at 100 kc.

Step 4. Place INT. OSC. - F.S. OSC. switch (Z) on the RFO front panel to position INT. OSC.

Step 5. Adjust INT. OSC. ZERO ADJ. (L-2080) on the front panel with an insulated screwdriver to get minimum frequency opening and closing of electron eye 6E5 (front panel) and labeled ZERO BEAT INDICATOR. A minimum deviation in deflection is

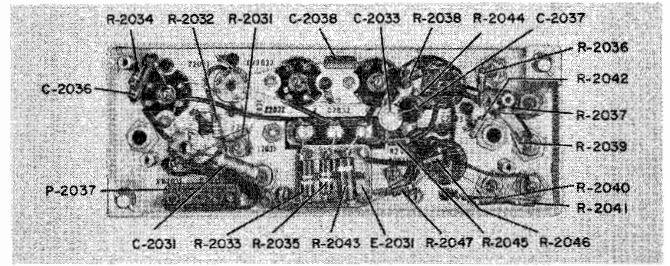


Figure 7-17. RFO, Unit 2 (Z-2034), Cover Removed, Bottom View

ideal. Refer to Section 2 for detailed electron eye indication.

An alternate means of checking the frequency of unit 3 may be accomplished by means of an external oscilloscope. Use Oscilloscope OS-8A/U, or equivalent. Follow steps 1, 2, and 3 in the preceding frequency check.

Step 1. Connect cable from INT. OSC. jack on the RFO front panel to the vertical input of the oscilloscope.

Step 2. Connect cable from 100 KC X-TAL jack on the RFO front panel to the horizontal input of the oscilloscope.

A 1:1 ratio Lissajous pattern should appear on the oscilloscope (refer to figure 7-2). If not, adjust INT. OSC. ZERO ADJ. until a 1:1 pattern that is as nearly stationary as possible is observed on the oscilloscope.

(b) UNIT 3 ALIGNMENT.—The alignment of unit 3 is a critical process and should be undertaken only by the most skilled technical personnel.

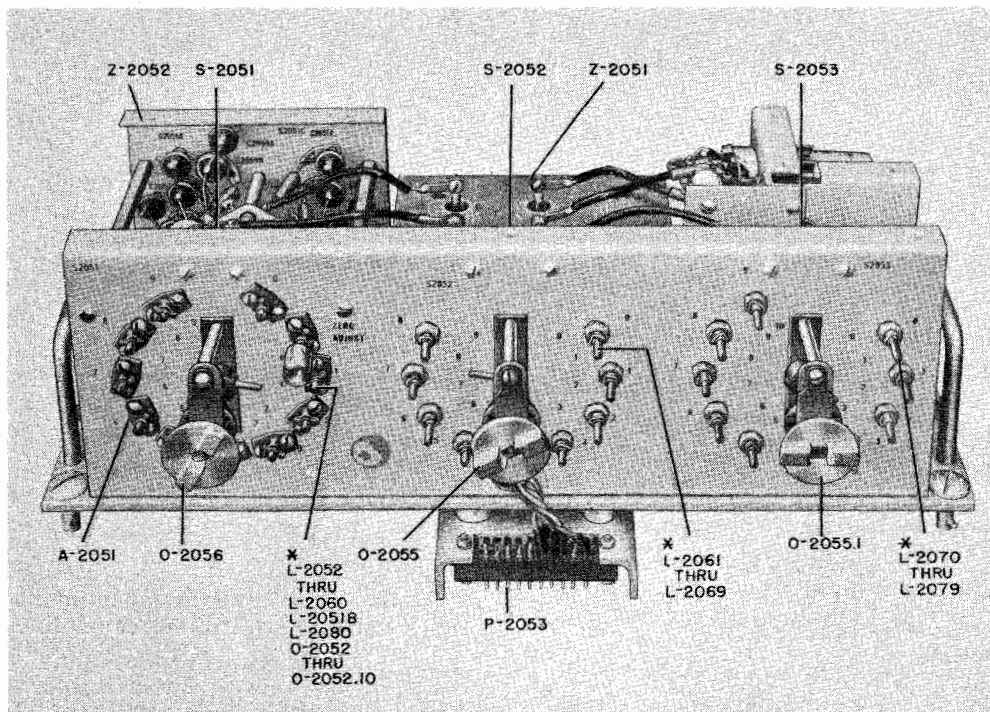


Figure 7-18. RFO, Unit 3 (Z-2053), Top Oblique View

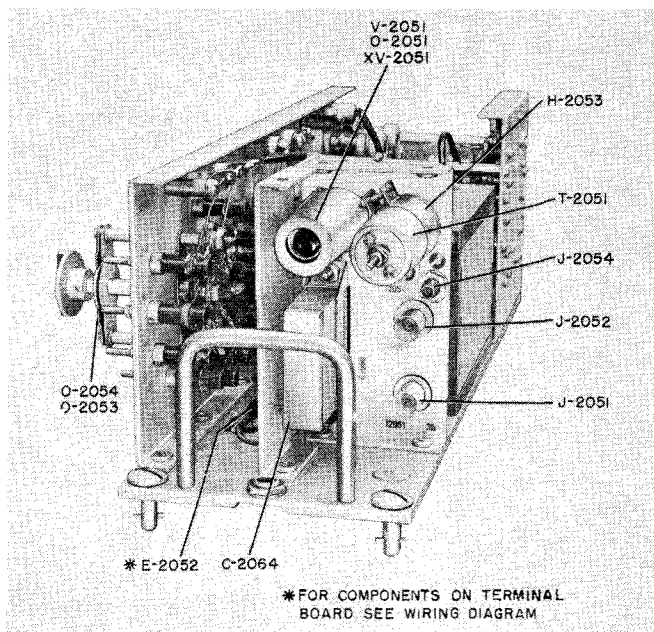


Figure 7-19. RFO, Unit 3 (Z-2053), Right Side View

Perform the following procedure to align the interpolation oscillator. These adjustments are to be made at a base depot only and are not intended for field use. For field check of unit 3, refer to paragraph 5 g.

An accurate frequency meter is required to make these adjustments. Frequency Meter AN/USM-29 or the AN/FRM-3 may be used.

CAUTION

These adjustments are factory adjustments and should *not* be tampered with unless absolutely necessary.

Step 1. Remove unit 3 from mounting (as described in 5 h (2) (a) below), place on extension test cables, cheat interlock, and place equipment in STANDBY condition.

Step 2. Connect unit 3 output (3a) to the input of the AN/USM-29, or equivalent.

Step 3. The AN/USM-29 has a built-in oscilloscope. If an external oscilloscope, such as the OS-8A/U, is used, connect the output of unit 3 to the vertical input and the output of the frequency meter to the horizontal input of the oscilloscope to obtain a Lissajous pattern.

Step 4. Warm up the ovens and filaments at least one hour before making adjustments.

Step 5. Place unit 3 switch S-2051 at position 0, switch S-2052 at position 9, and switch S-2053 at position 10. This will set up a frequency of 91 kc on unit 3.

Step 6. Position the AN/USM-29 frequency selection knobs to 91 kc.

Step 7. Adjust INT. OSC. ZERO ADJ. (L-2080) for a 1:1 Lissajous pattern, as observed on the AN/USM-29 oscilloscope. If a 1:1 Lissajous figure cannot be obtained when adjusting L-2080, then L-2051B, the coarse adjustment (at adjustment label 0), must be set so that a 1:1 Lissajous pattern may be obtained when L-2080 is approximately in the center of its range.

Note

Adjustment of L-2080 and L-2051B must be made *only* when the output of unit 3 is 91 kc.

Step 8. Place unit 3 switch S-2051 at position 0 and switch S-2052 at position 9. On the AN/USM-29 set the 1K knob to position 0 and the 100 knob to position 9.

Step 9. Place both the unit 3 switch S-2053 and the 10 knob of the AN/USM-29 to the positions listed in table 7-7, and adjust the corresponding inductors, labeled on the front of unit 3, for a 1:1 Lissajous pattern as observed on the AN/USM-29 oscilloscope. Adjustments must be made in the order given in table 7-7.

TABLE 7-7. UNIT 3, S-2053 AND AN/USM-29 10 KNOB POSITIONS AND ADJUSTMENTS

| POSITION OF S-2053 AND 10 KNOB (AN/USM-29) | ADJUSTMENT | ADJUSTMENT LABEL |
|--|------------|------------------|
| 9 | L-2079 | 9 |
| 8 | L-2078 | 8 |
| 7 | L-2077 | 7 |
| 6 | L-2076 | 6 |
| 5 | L-2075 | 5 |
| 4 | L-2074 | 4 |
| 3 | L-2073 | 3 |
| 2 | L-2072 | 2 |
| 1 | L-2071 | 1 |
| 0 | L-2070 | 0 |

Step 10. Place unit 3 switch S-2051 to position 0 and switch S-2053 to position 10. On the AN/USM-29 set the 1K knob to position 0 and the 10 knob to position 10.

Step 11. Place both unit 3 switch S-2052 and the 100 knob of the AN/USM-29 to the positions listed in table 7-8, and adjust the corresponding inductors labeled on the front of unit 3 for a 1:1 Lissajous pattern as observed on the AN/USM-29 oscilloscope. Adjustments must be made in the order given in table 7-8.

Step 12. Place unit 3 switch S-2052 to position 9 and switch S-2053 to position 10. On the AN/USM-29, set the 100 knob to position 9 and the 10 knob to position 10.

Step 13. Place both unit 3 switch S-2051 and the 1K knob of the AN/USM-29 to the positions listed in table 7-9, and adjust the corresponding inductors labeled on the front of unit 3 for a 1:1 Lissajous pattern as observed on the AN/USM-29 oscilloscope. Adjustments must be made in the order given in table 7-9.

**TABLE 7-8. UNIT 3, S-2052 AND AN/USM-29
100 KNOB POSITIONS AND ADJUSTMENTS**

| POSITION OF S-2052 AND 100 KNOB (AN/USM-29) | ADJUSTMENT | ADJUSTMENT LABEL |
|---|------------|------------------|
| 8 | L-2069 | 8 |
| 7 | L-2068 | 7 |
| 6 | L-2067 | 6 |
| 5 | L-2066 | 5 |
| 4 | L-2065 | 4 |
| 3 | L-2064 | 3 |
| 2 | L-2063 | 2 |
| 1 | L-2062 | 1 |
| 0 | L-2061 | 0 |

**TABLE 7-9. UNIT 3, S-2051 AND AN/USM-29
1K KNOB POSITIONS AND ADJUSTMENTS**

| POSITION OF S-2051 AND 1K KNOB (AN/USM-29) | ADJUSTMENT | ADJUSTMENT LABEL |
|--|------------|------------------|
| 1 | L-2052 | 1 |
| 2 | L-2053 | 2 |
| 3 | L-2054 | 3 |
| 4 | L-2055 | 4 |
| 5 | L-2056 | 5 |
| 6 | L-2057 | 6 |
| 7 | L-2058 | 7 |
| 8 | L-2059 | 8 |
| 9 | L-2060 | 9 |

Step 14. Recheck INT. OSC. ZERO ADJ. (L-2080) at 91 kc by repeating steps 5 and 6 and adjusting L-2080 for a 1:1 Lissajous pattern, if necessary.

(c) T-2051 FILTER ADJUSTMENT.—Unit 3 contains a band-pass filter, T-2051 (90-100 kc), which has two adjustments.

Note

The following adjustments were made at the factory and should not be tampered with unless the transformer has been replaced or if an adjustment has become loose.

Step 1. Turn switch S-2051 to position 4, switch S-2052 to position 9, and switch S-2053 to position 10. This sets up unit 3 for a 95-kc output.

Step 2. Connect Multimeter MF-25A/U (or equivalent) with r-f probe to test point 3a (J-2054). Connect output 3a (J-2052) to its own cable on the mounting with an extension test cable.

Step 3. Adjust first the bottom and then the top slug of filter T-2051 to obtain a peak reading on the multimeter. Apply glyptal to the top adjustment screw.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—The following procedure should be followed to remove unit 3 from the mounting (unit 14):

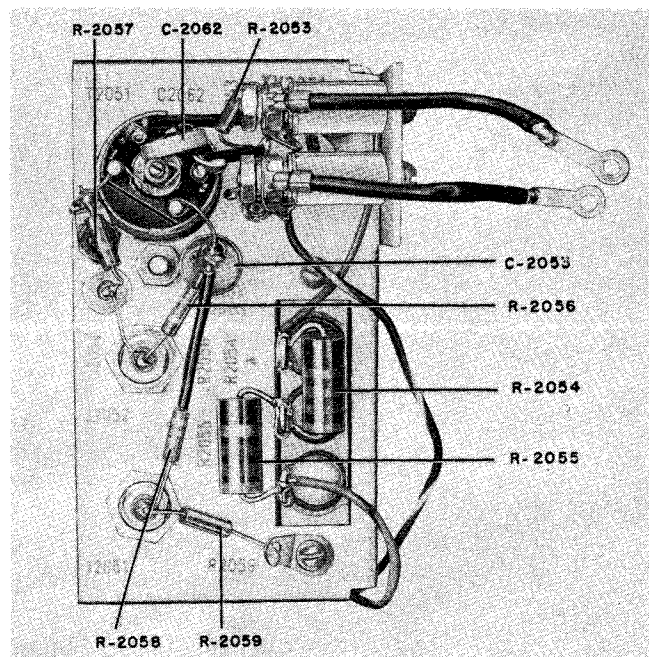


Figure 7-20. RFO, Unit 3 (Z-2053), Tube Shelf, Wiring Side

Step 1. Place knobs Ⓞ, Ⓟ and Ⓠ to position 0. (Red dots on flexible couplers should face upward.)

Step 2. Disconnect the two cables plugged into unit 3.

Step 3. Loosen the four 1/4-turn cowl fasteners that secure unit 3 to the mounting.

Step 4. Using the two handles, pull unit slowly and straight up until plugs and couplers are disengaged.

To reach the switch wafers, oscillator oven and tube sockets, remove the 12 screws holding the top cover plate of unit 3, and remove the cover plate. The left side cover plate may also be removed at this time.

To remove assembly Z-2052, loosen screws and pull straight backwards.

The following steps should be observed to remove oven assembly Z-2051:

Step 1. Remove connections C, D, G and K at top of oven assembly.

Step 2. Remove the two screws supporting the oven assembly at the bottom of unit 3.

Step 3. Remove the oven assembly far enough from the chassis to disconnect leads to the oven terminal and plate.

Whenever oven Z-2051 is removed and replaced by another oven, L-2051B, mounted on front plate of unit 3, must also be removed and replaced.

CAUTION

Because of critical circuitry, L-2051B and oven Z-2051 should not be replaced indi-

vidually. When one or the other is replaced, both items (L-2051B and Z-2051) should be replaced as a unit.

When oven assembly Z-2051 has been removed from unit 3, the thermostat (S-2054) in the oven may be removed and replaced as follows:

Step 1. Remove the nine flathead screws holding the terminal end of the oven assembly.

Step 2. Remove the two large flathead screws at the bottom of the oven assembly.

Step 3. Remove melamine box surrounding the oven assembly.

Step 4. Unsolder thermostat leads to terminal lugs "T".

Step 5. Remove and replace thermostat.

Step 6. Reassemble and glyptal all screws.

(b) REPLACEMENT AND ADJUSTMENTS.

—To replace the oscillator oven, replace screws on bottom of unit 3 and replace wires on the proper lugs as follows:

- "H"—Gray-green
- "H"—No connection
- "T"—Gray
- "T"—Gray-red

To replace assembly Z-2052, slide it onto the shaft of switch S-2051. The keyway "pip" on the switch wafer

rotor must be lined up with the "pip" on switch wafer rotor of switch S-2051. Replace the four mounting screws and connect the wire.

To replace unit 3, be sure to place red dots on flexible couplers facing upwards, and place Ⓒ, Ⓓ, and Ⓔ front panel knobs on position 0. At this point, the red indicators on the shafts should be pointing to position 0.

Line up the two chassis guide holes on unit 3 with the chassis guide pins on unit 14 mounting. Push unit 3 straight down, making sure couplers are mating properly. Properly seat unit 3 in position, and tighten the four cowl fasteners. The top and side covers may be replaced before or after unit 3 is mounted.

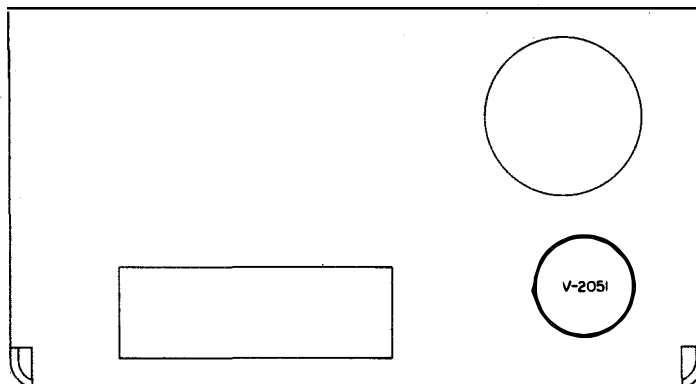
CAUTION

Do not force unit 3 into position. Forcing may cause the pins on its connecting plug to be damaged.

Note

When replacing unit 3 with a new unit 3, it may be necessary to loosen the power plug mounting screws and the chassis guide bushing nuts to effect proper alignment on unit 14 mounting. After proper alignment, be sure to tighten the power plug screws and guide bushing nuts.

j. FREQUENCY MULTIPLIER, UNIT 4 (Z-2103), TROUBLE SHOOTING.—The frequency multiplier



NOTES

1. ALL MEASUREMENTS TO GROUND UNLESS OTHERWISE INDICATED.
2. READINGS TAKEN WITH MULTIMETER ME-25A/U, VOLTAGE READINGS D-C UNLESS OTHERWISE INDICATED. USE THAT SCALE WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE, A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON A ONE VOLT SCALE; A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON A 250 VOLT SCALE.
3. TEST KEY (T) IN CENTER POSITION.
4. TRANSMITTER IN STANDBY.
5. RFO FREQUENCY SET AT 2 MC. BAND SWITCH (F) AT .3-6 MC POSITION.

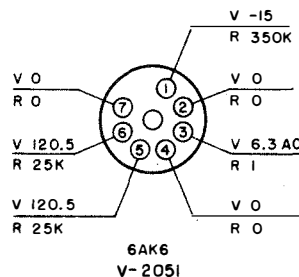


Figure 7-21. RFO, Unit 3 (Z-2053), Voltage and Resistance Chart

NOTES

1. ALL MEASUREMENTS TO GROUND UNLESS OTHERWISE INDICATED.
2. READINGS TAKEN WITH MULTIMETER ME-25A/U, VOLTAGE READINGS D-C UNLESS OTHERWISE INDICATED. USE THAT SCALE WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE, A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON A ONE VOLT SCALE; A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON A 250 VOLT SCALE.
3. TEST KEY (T) IN CENTER POSITION.
4. TRANSMITTER IN STANDBY.
5. RFO FREQUENCY SET AT 2 MC. BAND SWITCH (FF) AT .3-6 MC POSITION.

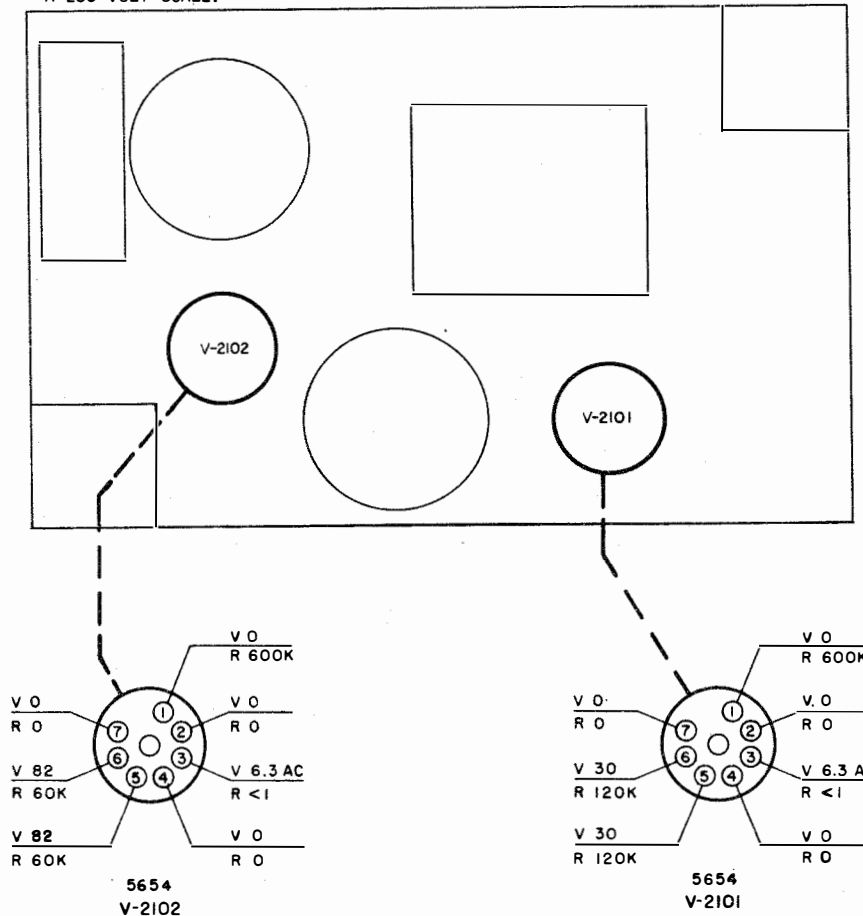


Figure 7-22. RFO, Unit 4 (Z-2103), Voltage and Resistance Chart

(unit 4) receives a 1-mc signal (approximately 8.0 volts), which can be checked at test point 2a with a multimeter (ME-25A/U or equivalent), using the r-f probe. The output is an 8-mc signal which can be checked at 4a (approximately 1.1 volts). If there is no output, use the trouble location diagram, figure 7-120, the schematic diagram, figure 7-129, the wiring diagram, figure 7-130, and the voltage and resistance chart, figure 7-22, to locate the faulty component.

**k. FREQUENCY MULTIPLIER, UNIT 4
(Z-2103) REPAIR AND ADJUSTMENT.**

(1) ELECTRICAL ADJUSTMENTS.—The four adjustments that may be made on unit 4 are the top and bottom slugs of Z-2101 and Z-2102 (figures 7-23 and 7-24).

Note

These four adjustments are made at the *factory* and should *not* be tampered with unless one of the transformers has been replaced or if an adjustment has become loose.

Unit 4 is located on the top of the RFO, figure 7-8, and the top slugs of Z-2101 and Z-2102 may therefore be adjusted without removing unit 4 from the mounting. The RFO drawer must be pulled all the way out, and its top protective cover removed in order to make these adjustments.

Note

Do not make these adjustments until units 1 and 2 are properly aligned.

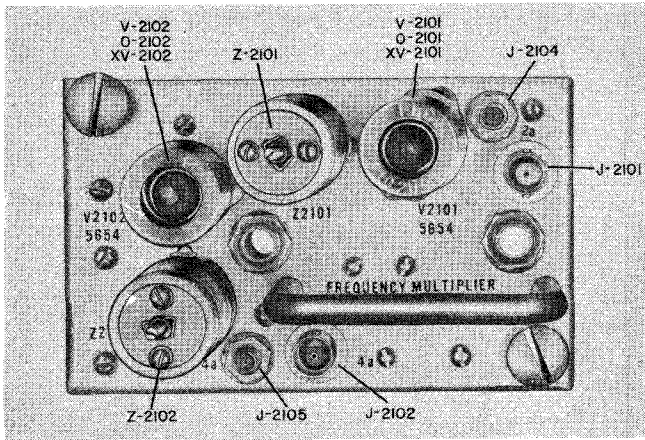


Figure 7-23. RFO, Unit 4 (Z-2103), Top View

Step 1. Pull the RFO drawer out, cheat interlock, and place equipment in stand-by condition, switch $\text{\textcircled{P}}$ in STANDBY.

Step 2. Connect Multimeter ME-25A/U (or equivalent) with r-f probe to output 4a, using 2.5-volt scale.

Step 3. Adjust top slugs of Z-2101 and Z-2102 for maximum reading on Multimeter ME-25A/U.

Step 4. Connect unit 4 to an extension test cable, and adjust bottom slugs of Z-2101 and Z-2102 for maximum reading on Multimeter ME-25A/U.

Step 5. Repeat steps 3 and 4 for maximum voltage output and seal (glyptal) the top slugs.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—Unit 4 may be removed by loosening the two 1/4-turn cowl fasteners and removing the two cables connected to the chassis. Use handle to remove from mounting.

CAUTION

When removing unit 4, pull handle slowly and straight up so as not to bend any of the pins on the connecting plug.

(b) REPLACEMENT AND ADJUSTMENTS.

—To replace unit 4, line up the two chassis guide holes on unit 4 with the chassis guide pins on unit 14 mounting. Push unit 4 down slowly until it is properly seated in position, and tighten the two cowl fasteners. Connect the two cables to proper jacks on unit 4.

CAUTION

Do not force unit 4 into position. Forcing may cause the pins on its connecting plug to be damaged.

Note

When replacing unit 4 with a new unit 4, it may be necessary to loosen the power plug mounting screws and the chassis guide bushing nuts to effect proper alignment on unit 14

mounting. After proper alignment, be sure to tighten the power plug screws and guide bushing nuts.

No adjustments are required on unit 4 unless Z-2101 or Z-2102 is replaced. When replacing either one of these transformers, adjust its top and bottom slug as described in paragraph 5k(1).

l. ELECTRONIC FREQUENCY CONVERTER, UNIT 5 (Z-2158) TROUBLE SHOOTING.—The electronic frequency converter (unit 5) has five inputs and one output. Signal 2b can be checked at test point 2b, signal 3a at test point 3a on unit 3, signal 4a at test point 4a, signal 1b at test point 1b (during CW operation CARRIER ON), and signal 12a at test point 12a on unit 12. If no signal is present (during FSK operation), on either test points 1b or 12a, check proper operation of relay K-2151 in unit 5. Refer to table 7-10 for nominal r-f voltages at test points. The output signal may be checked at test point 5a (approximately 1.0 volt). If there is no output, use the trouble location diagram, figure 7-120, the schematic diagram, figure 7-131, the wiring diagram, figure 7-132, and the voltage and resistance chart, figure 7-25, to locate the fault.

TABLE 7-10. UNIT 5, R-F VOLTAGE AT TEST POINTS

| TEST POINT | NOMINAL VOLTAGE |
|------------|--------------------|
| 4a | 1.1 |
| 2b | 0.9 |
| 5a | 1.0 |
| 1b | 0.2 CW, CARRIER ON |

m. ELECTRONIC FREQUENCY CONVERTER, UNIT 5 (Z-2158) REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—The 14 adjustments that can be made on unit 5 are the top and

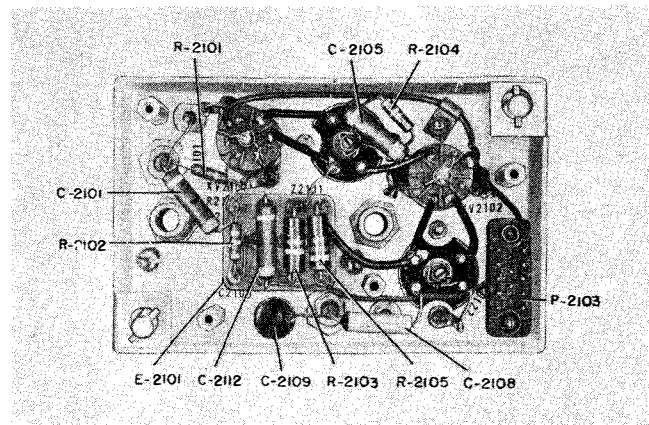


Figure 7-24. RFO, Unit 4 (Z-2103), Cover Removed, Bottom View

bottom slugs of Z-2151 through Z-2157; refer to figures 7-26 and 7-27.

of the transformers is replaced or an adjustment becomes loose.

Note

These 14 adjustments are made at the *factory* and should *not* be tampered with unless one

The RFO drawer must be pulled out, interlock cheated, and the unit must be connected to an extension test cable to make these adjustments. Refer to Section 1 for extension test cable fabrication instructions.

NOTES

1. ALL MEASUREMENTS TO GROUND UNLESS OTHERWISE INDICATED.
2. READINGS TAKEN WITH MULTIMETER ME-25A/U, VOLTAGE READINGS D-C UNLESS OTHERWISE INDICATED. USE THAT SCALE WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE, A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON A ONE VOLT SCALE; A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON A 250 VOLT SCALE.
3. TEST KEY (T) IN CENTER POSITION.
4. TRANSMITTER IN STANDBY.
5. RFO FREQUENCY SET AT 2 MC. BAND SWITCH (FF) AT .3-6 MC POSITION.

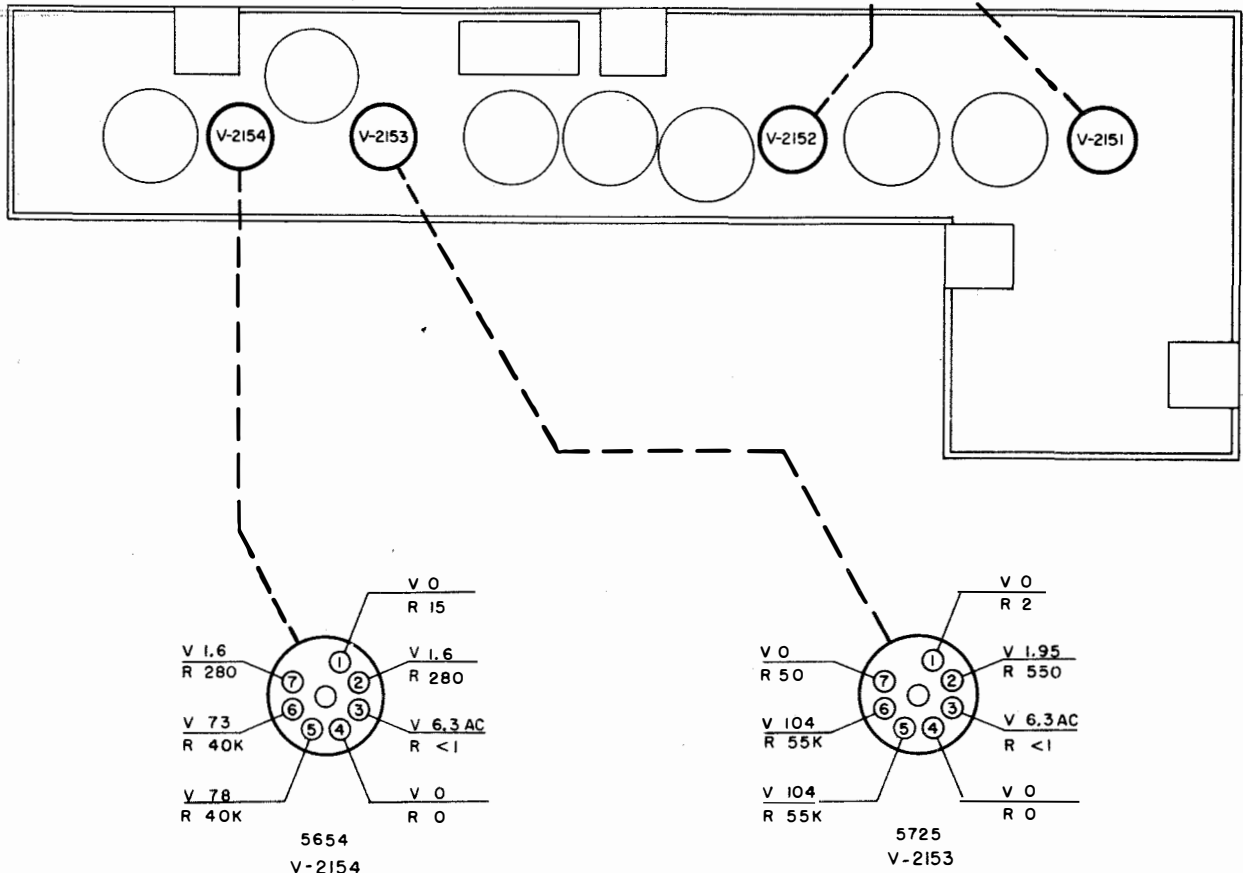
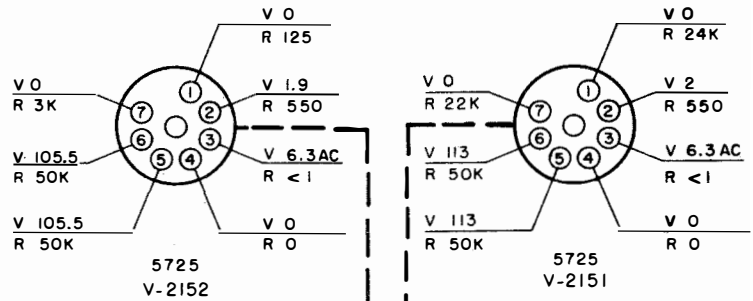


Figure 7-25. RFO, Unit 5 (Z-2158), Voltage and Resistance Chart

Note

Do not make these adjustments until units 1, 2, 3, and 4 are properly aligned.

Step 1. Pull RFO drawer all the way out and cheat interlock.

Step 2. Connect unit 5 to an extension test cable, and connect cables to following jacks on unit 5: 4a, 2b, 1b, and 3a.

Step 3. Place equipment in stand-by condition, switch $\text{\textcircled{P}}$ in STANDBY.

Step 4. Place knob $\text{\textcircled{C}}$ at 5, $\text{\textcircled{D}}$ at 0, and knob $\text{\textcircled{E}}$ at 0 (position of other knobs immaterial).

Step 5. Connect Multimeter (ME-25A/U or equivalent) with r-f probe to test point 5a and set meter on the 2.5-volt scale.

Step 6. Adjust top and bottom slugs of Z-2151 through Z-2157 for maximum reading on Multimeter ME-25A/U. Apply glyptal to the top adjustment screws of Z-2151 through Z-2157.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—Unit 5 may be removed by turning four 1/4-turn cowl fasteners and removing the six cables connected to chassis. Use handles to remove unit 5 from the mounting. Figures 7-26 and 7-27 show the location of all components on unit 5.

CAUTION

When removing unit 5, pull handles slowly and straight up so as not to bend any of the pins on the connecting plug.

(b) REPLACEMENT AND ADJUSTMENTS.

—To replace unit 5, line up guide holes with guide

pins on mounting. Seat unit 5 properly, and tighten cowl fasteners. Connect the six cables to proper jacks on unit 5.

CAUTION

Do not force unit 5 into position. This may cause the pins on its connecting plug to be damaged.

Note

When replacing unit 5 with a new unit 5, it may be necessary to loosen the power plug mounting screws and the chassis guide bushing nuts to effect proper alignment on unit 14 mounting. After proper alignment, be sure to tighten the power plug screws and guide bushing nuts.

No adjustments are required on unit 5 unless one of the transformers, Z-2151 through Z-2157, is replaced. Adjustments should be performed as described in paragraph 5m(1).

n. ELECTRONIC FREQUENCY CONVERTER, UNIT 6 (Z-2204), TROUBLE SHOOTING.—The electronic frequency converter (unit 6), figures 7-28 and 7-29, has three inputs and three outputs. Two of the outputs can be checked by means of an external oscilloscope (OS-8A/U or equivalent), enabling an operational check of unit 6 at two points. Signal 6c is the 10-kc output of blocking oscillator tube V-2202A (12AU7), which can be checked by means of an oscilloscope at the 10 KC jack on the RFO front panel. If this signal is not present, tube V-2201 (5654) or V-2202 (12AU7) is probably at fault. Signal 6a is the 210- to 300-kc output of the oscillator stage, which can also be checked by means of an oscilloscope at the 10 KC STEP jack on the front panel of the RFO. If signal 6a is not present, check tubes V-2203 (5725), V-2204

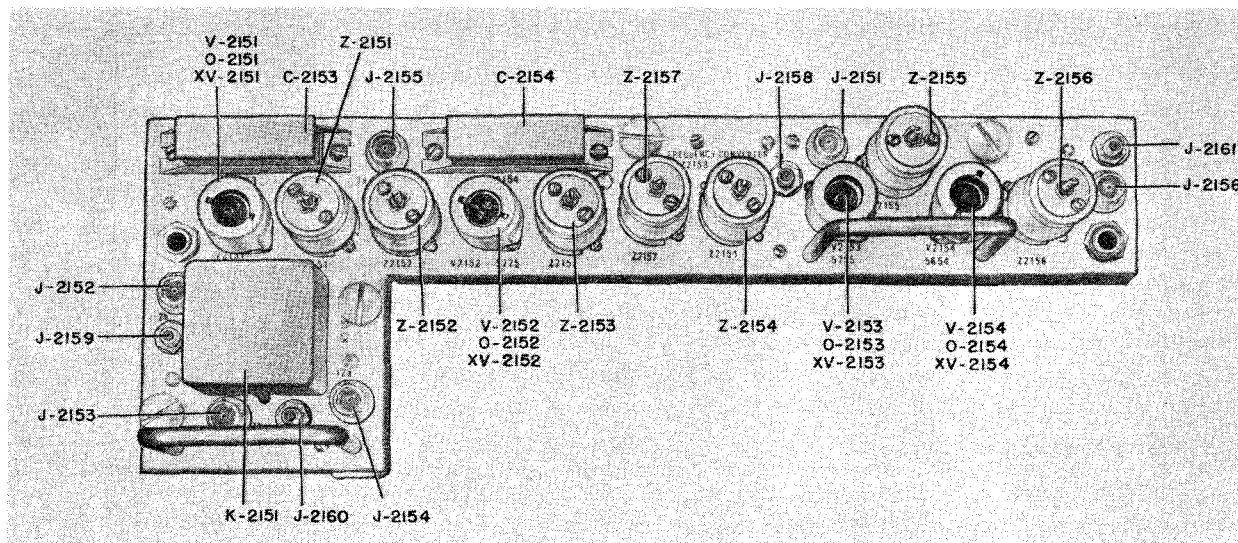


Figure 7-26. RFO, Unit 5 (Z-2158), Top View

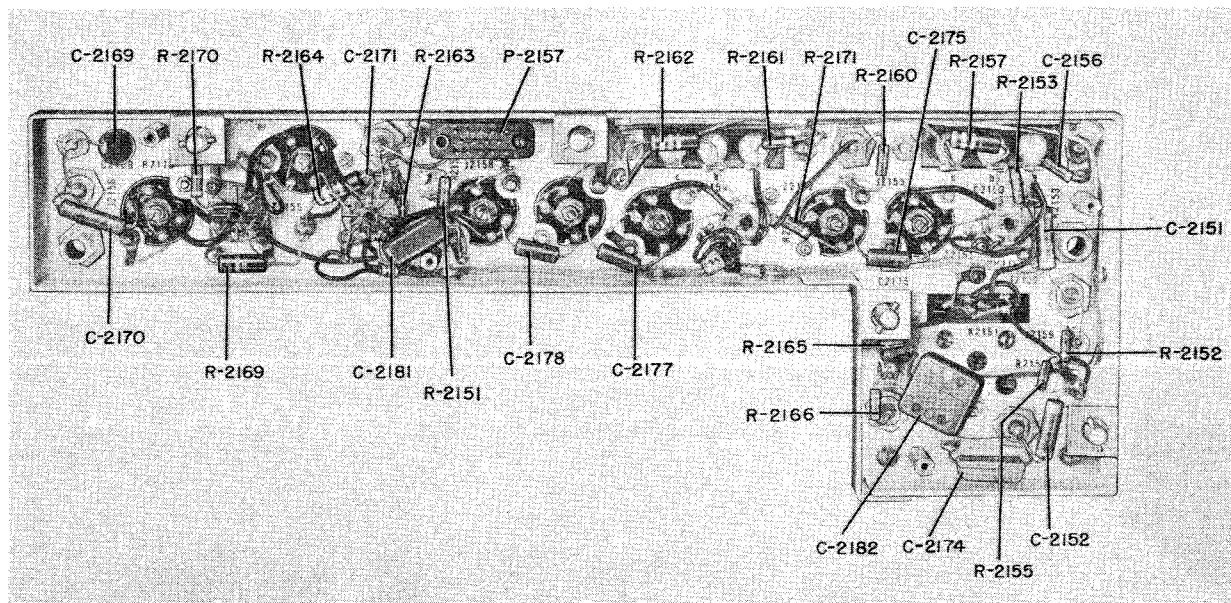


Figure 7-27. RFO, Unit 5 (Z-2158), Cover Removed, Bottom View

(5654), and V-2205 (6AK6). If signals 6a, 6c and all of the inputs are present but there is no output (signal 6b), check tubes V-2206 (5725), V-2207 (5725), V-2208 (5654), and V-2209 (5654). Nominal r-f voltages may be measured by means of Multimeter ME-25A/U (with r-f probe) as indicated in table 7-11.

TABLE 7-11. UNIT 6, R-F VOLTAGE AT TEST POINTS

| TEST POINT | NOMINAL VOLTAGE |
|------------|-----------------|
| 1a | 7.0 |
| 2c | 0.9 |
| 5a | 0.9 |
| 6b | 0.8 |

Use the trouble location diagram, figure 7-120, the schematic diagram, figure 7-133, the wiring diagram, figure 7-134, and the voltage and resistance chart, figure 7-30, to locate the faulty component.

o. ELECTRONIC FREQUENCY CONVERTER, UNIT 6 (Z-2204), REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—All adjustments on unit 6 are factory adjustments with the exception of R-2210 and C-2219 (figure 7-28). The factory adjustments should not be tampered with unless the adjustable component has been changed or complete alignment is required because of poor operation of unit 6, as determined by the trouble location diagram method outlined in figure 7-120.

(a) R-2210 ADJUSTMENT.—Whenever tube V-2202 is replaced, or a complete alignment of unit 6 is undertaken, potentiometer R-2210 (figure 7-28) must be adjusted as follows:

Note

R-2210 may be adjusted without removing unit 6 from mounting. Unit 1 must be properly aligned before adjusting R-2210.

Step 1. Place equipment in stand-by condition, switch $\text{\textcircled{P}}$ in STANDBY. Allow proper warm-up (1 hour) for ovens and filaments.

Step 2. Connect a cable from jack 10 KC on front panel of RFO to vertical input of Oscilloscope OS-8A/U, or equivalent.

Step 3. Connect a cable from jack 100 KC X-TAL on the RFO front panel to the horizontal input of the oscilloscope.

Step 4. Loosen locknut and adjust R-2210 for a stable 10:1 Lissajous pattern on the oscilloscope screen. (Refer to figure 7-2.)

Step 5. Rotate R-2210 clockwise until the pattern breaks up. Turn R-2210 back until the 10:1 pattern reappears. Mark this position on the chassis.

Step 6. Rotate R-2210 counterclockwise until the pattern breaks up again. Turn R-2210 back until the 10:1 pattern reappears. Mark this position on the chassis.

Step 7. Set R-2210 midway between the two marked positions.

Note

If a 10:1 Lissajous pattern cannot be obtained, but one of a different ratio (for instance 9:1 or 11:1), check the values of the components of the RC circuits in the blocking oscillator.

(b) C-2219 ADJUSTMENT.—Whenever mixer tube V-2203, reactance tube V-2204, or oscillator tube V-2205 are replaced, variable capacitor C-2219 (fig-

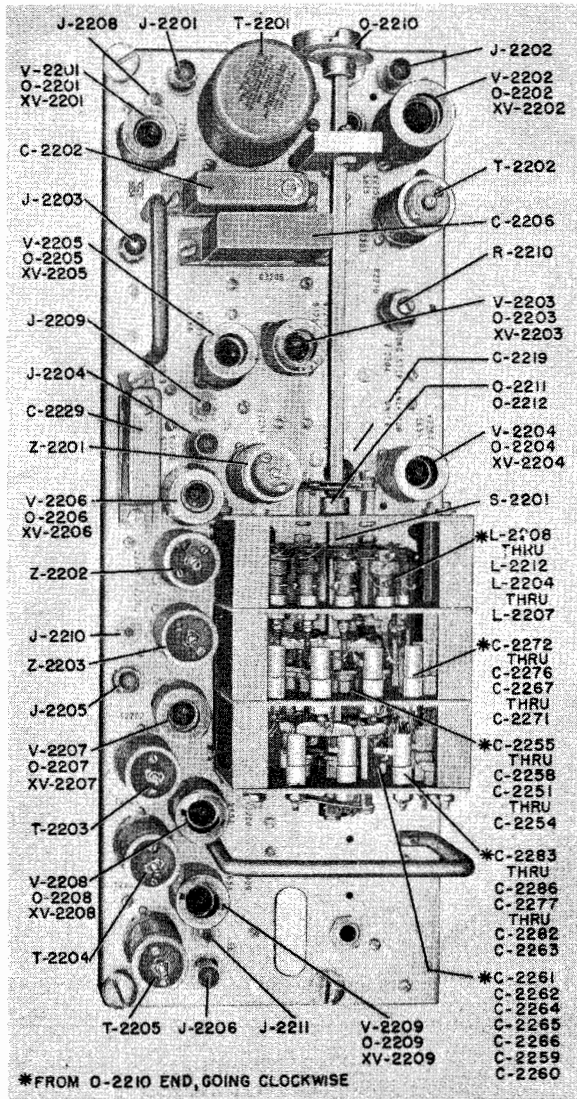


Figure 7-28. RFO, Unit 6 (Z-2204), S-2201 Cover Removed, Top View

ure 7-29) must be adjusted. C-2219 is adjusted in the following manner:

Note

Unit 1 and R-2210 must be properly aligned before making adjustments of C-2219. C-2219 may be adjusted without removing unit 6 from the mounting.

Step 1. Place equipment in stand-by condition, switch $\text{\textcircled{P}}$ in STANDBY.

Step 2. After proper warm-up place knob $\text{\textcircled{J}}$ to position 9 (300 kc). Positions of other knobs are immaterial.

Step 3. Connect a cable from 10 KC STEP jack on RFO front panel to the vertical input of Oscilloscope OS-8A/U, or equivalent.

Step 4. Connect a cable from 100 KC X-TAL jack on RFO front panel to the horizontal input of the oscilloscope.

Step 5. Adjust C-2219 for a stable 3:1 Lissajous pattern on the oscilloscope screen.

Step 6. Rotate C-2219 clockwise until the pattern breaks up. Turn C-2219 back until the 3:1 pattern reappears. Mark position of adjustment slot.

Step 7. Rotate C-2219 counterclockwise until pattern breaks up again. Turn C-2219 back until the 3:1 pattern reappears. Mark position of adjustment slot.

Step 8. Set C-2219 adjustment slot at a midpoint between the two markings.

Step 9. Zero the interpolation oscillator as described in paragraph 5b(1)(a).

Step 10. Disconnect the cable from 100 KC X-TAL jack and connect the cable between the horizontal input of the oscilloscope and the INT. OSC. jack.

Step 11. Place front panel knobs $\text{\textcircled{J}}$, $\text{\textcircled{C}}$, and $\text{\textcircled{D}}$ to position 9, and $\text{\textcircled{E}}$ to position 10.

Step 12. A 3:1 Lissajous pattern should now be observed on the oscilloscope screen. If the correct pattern can be found by rotating the INT. OSC. ZERO ADJ. a half turn in either direction, unit 6 is on frequency; if it is not, align the 10-kc step switch S-2201 as instructed in paragraph 5o(1)(d). Do not adjust C-2219 to obtain this 3:1 pattern.

Step 13. If the correct pattern was obtained in step 12, other positions of switch S-2201 may be checked by observing the Lissajous patterns as indicated in table 7-2.

Note

No adjustments should be made in this check. If any switch position does not produce the correct Lissajous pattern, proceed with the alignment of switch S-2201.

(c) T-2202 ADJUSTMENT.—The adjustments of ringing coil T-2202 are factory adjustments and should not be tampered with unless it is replaced or an adjustment becomes loose. Unit 6 must be removed from the mounting and placed on extension test cables for this adjustment. (See paragraph 5o(2)(a).) The top and bottom slugs of T-2202 should be set so that they are turned in an equal distance and touch each other.

For a more efficient alignment, connect an oscilloscope with frequency response characteristics of at least 2 mc between pin 1 of T-2202 and chassis ground, with a 1/2-megohm, 1/2-watt resistor used to isolate the oscilloscope test probe. Adjust first the bottom, then the top slug of T-2202 for maximum positive pulse, with minimum ringing.

(d) STEP OSCILLATOR S-2201 ADJUSTMENTS.—Whenever a complete alignment of the 10-kc step switch S-2201 is required, adjustments Z-2201 and

C-2219 (on top of unit 6 chassis) and inductors L-2204 through L-2212 (adjusted through access holes marked D0 through D8, respectively, at the rear of S-2201) will require adjustment.

Note

The 10-kc step switch adjustments are factory adjustments and should not be tampered with unless absolutely necessary. These adjustments cannot be made until unit 1, the 10-kc blocking oscillator, and transformer T-2202 in unit 6 have been properly aligned. Use the special insulated alignment screwdriver provided with the RFO.

The S-2201 adjustments are made in the following manner, with unit 6 removed from the mounting and placed on extension test cables. Allow (1 hour) warm-up for ovens and filaments.

Step 1. Turn S-2201 to position 9 (300 kc).

Step 2. Connect a cable from 100 KC X-TAL jack on RFO front panel to the vertical input of Oscilloscope OS-8A/U, or equivalent.

Step 3. Connect a cable from 10 KC STEP jack on RFO front panel to the horizontal input of the oscilloscope and place equipment in STANDBY condition.

Step 4. Set C-2219 to half capacity position (adjustment slot parallel with the two capacitor mounting screws).

Step 5. Adjust Z-2201 for a 3:1 Lissajous pattern.

Step 6. Rotate Z-2201 clockwise until the pattern unlocks, and then counterclockwise until it locks in again.

Step 7. Rotate Z-2201 counterclockwise until the pattern unlocks, and then clockwise until the pattern locks in again. Note the number of turns through the "lock-in" range of the oscillator and set Z-2201 at the midrange point.

Step 8. Disconnect the scope cable to the 100 KC X-TAL jack on RFO front panel, and connect this cable to the 10 KC jack on the front panel.

Step 9. For the positions 8 through 0 of S-2201, use table 7-12. Turn slugs of indicators clockwise until oscillator unlocks, and then turn slowly counterclockwise until the oscillator locks at Lissajous pattern count indicated in table 7-12.

Step 10. Turn slugs counterclockwise until oscillator unlocks, then turn slowly clockwise until the oscillator again locks. Note the number of turns through the "lock-in" range of the oscillator and set the slugs at the midrange point.

Step 11. Glyptal has been applied to all critical adjustments of unit 6. Reapply glyptal to any of these adjustments that have been moved.

**TABLE 7-12. UNIT 6, 10-KC STEP
OSCILLATOR ADJUSTMENTS**

| POSITION OF S-2201 | ADJUSTMENT | ADJUSTMENT LABEL | LISSAJOUS PATTERN |
|--------------------|------------|------------------|-------------------|
| 8 | L-2212 | D8 | 29:1 |
| 7 | L-2211 | D7 | 28:1 |
| 6 | L-2210 | D6 | 27:1 |
| 5 | L-2209 | D5 | 26:1 |
| 4 | L-2208 | D4 | 25:1 |
| 3 | L-2207 | D3 | 24:1 |
| 2 | L-2206 | D2 | 23:1 |
| 1 | L-2205 | D1 | 22:1 |
| 0 | L-2204 | D0 | 21:1 |

(e) 10-KC STEP FILTER ADJUSTMENTS.— Whenever a component is replaced in the 10-kc step filter circuit, or a complete alignment of unit 6 is required, the 1.21- to 1.3-mc filter adjustments (10-kc

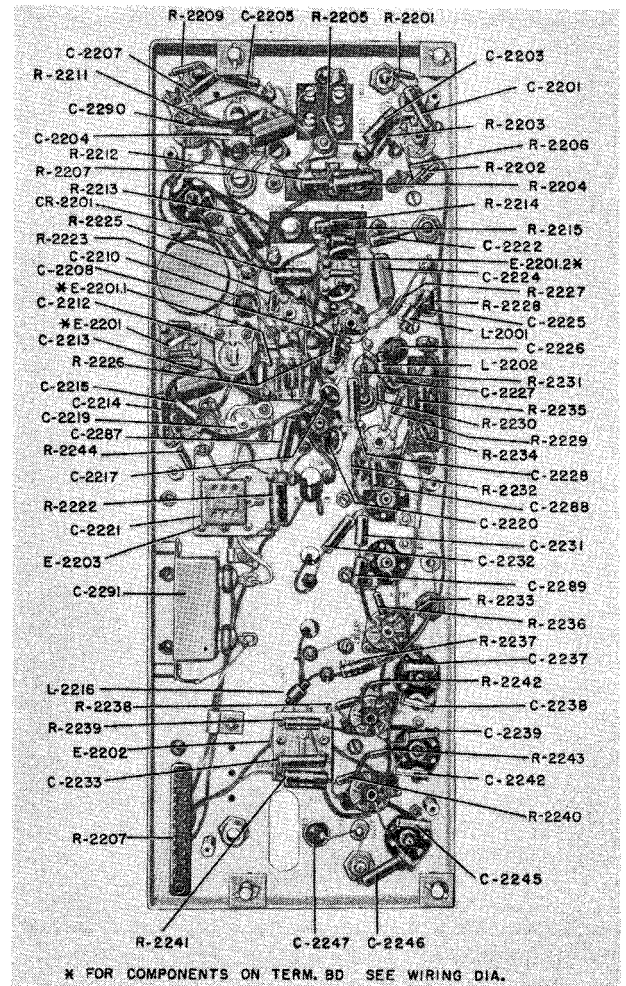


Figure 7-29. RFO, Unit 6 (Z-2204), Cover Removed, Bottom View

steps), Z-2202 and Z-2203 (located on the top of unit 6 chassis), and variable capacitors C-2267 through C-2276 (marked C, and C0 through C8, respectively, at the rear of S-2201) and C-2277 through C-2286 (marked B, and B0 through B8, respectively, at the rear of S-2201) will require adjustment.

Note

The 10-kc step filter adjustments are factory adjustments and should not be tampered with unless absolutely necessary. These adjustments cannot be made unless units 1, 2, and the other sections of unit 6 have been properly aligned.

It is assumed that unit 6 is still removed from the mounting and connected by extension test cables.

Step 1. Place S-2201 to position 9. Positions of other knobs immaterial.

Step 2. Connect Multimeter ME-25A/U (or equivalent) to pin 1 of mixer tube V-2207 and ground, with meter on the 2.5-volt scale. Place equipment in STANDBY condition.

Step 3. After proper warm-up (1 hour) for ovens and filaments, adjust in sequence Z-2202, C-2267 (through access hole C), Z-2203, and C-2277 (through access hole B) to obtain a peak reading on the multimeter. Repeat the adjustments until an absolute peak is reached.

Step 4. Place switch S-2201 to position 8, and following the sequence in table 7-13, adjust the corresponding variable filter capacitors, using the special insulated screwdriver, for the remaining positions of switch S-2201. A peak reading should be obtained for each adjustment.

(f) T-2203, T-2204, T-2205 ADJUSTMENT.—The 10.4-10.5-mc filter adjustments are the top and bottom slugs of transformers T-2203, T-2204 and T-2205 (figure 7-28) and are adjusted whenever a complete alignment is required or a component in the filter circuit has been replaced.

Note

These are factory adjustments and should not be tampered with unless absolutely necessary. Units 1, 2, 3, 4, 5, and the other sections of unit 6 must be properly aligned before making these adjustments.

Step 1. Connect Multimeter ME-25A/U (or equivalent) to test point 6b (J-2211), and place equipment in STANDBY condition.

Step 2. Place switch S-2201 (unit 6) to position 5, and the RFO front panel knobs Ⓞ, Ⓟ, and Ⓠ to position 0 (positions of other knobs immaterial). This setting will pass a frequency (10.45 mc), through filters T-2203, T-2204, and T-2205, which is at the mid-point of the band-pass range.

TABLE 7-13. UNIT 6, 10-KC STEP FILTER ADJUSTMENTS

| POSITION OF S-2201 | ADJUSTMENT | ADJUSTMENT LABEL |
|--------------------|------------------|------------------|
| 8 | C-2276 C-2286 | C8 B8 |
| 7 | C-2275 C-2285 | C7 B7 |
| 6 | C-2274 C-2284 | C6 |
| 5 | C-2273 C-2283 | C5 B5 |
| 4 | C-2272 C-2282 | C4 B4 |
| 3 | C-2271 C-2281 | C3 B3 |
| 2 | C-2270 C-2280 | C2 B2 |
| 1 | C-2269 C-2279 | C1 B1 |
| 0 | C-2268 C-2278 | C0 B0 |

Step 3. After proper warm-up (6 hours), adjust first the bottom, then the top slugs of T-2203, T-2204, and T-2205 to obtain a peak reading on the multimeter. Repeat the adjustments until an absolute peak is reached.

(g) 10-KC TRAP ADJUSTMENT.—The adjustment for the 10-kc trap is variable capacitor C-2212.

Note

This is a factory adjustment and should not be tampered with unless absolutely necessary.

Use a calibrated receiver, containing an "S" meter and capable of giving a minimum of 70-db attenuation at 10 kc away from the desired frequency of 10.4 to 10.5 mc. Use attenuators to limit the input to the receiver.

Step 1. Place equipment in STANDBY condition. It is assumed that unit 6 is still removed from the mounting and connected by means of extension test cables.

Step 2. After proper warm-up (1 hour) place switch S-2201 on position 9, the RFO front panel knobs Ⓞ on position 5, and Ⓟ and Ⓠ on position 0 (positions of other knobs immaterial).

Step 3. Disconnect cable to jack 6b (J-2206) on unit 6, and in its place connect the input to the receiver.

Step 4. Tune the receiver to the output frequency of unit 6 (10.495 mc).

Step 5. Retune the receiver very slowly for the

NOTES

1. ALL MEASUREMENTS TO GROUND UNLESS OTHERWISE INDICATED.
2. READINGS TAKEN WITH MULTIMETER ME-25A/U, VOLTAGE READINGS D-C UNLESS OTHERWISE INDICATED. USE THAT SCALE WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE, A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON A ONE VOLT SCALE; A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON A 250 VOLT SCALE.
3. TEST KEY (T) IN CENTER POSITION.
4. TRANSMITTER IN STANDBY.
5. RFO FREQUENCY SET AT 2 MC. BAND SWITCH (FF) AT .3-6 MC POSITION.

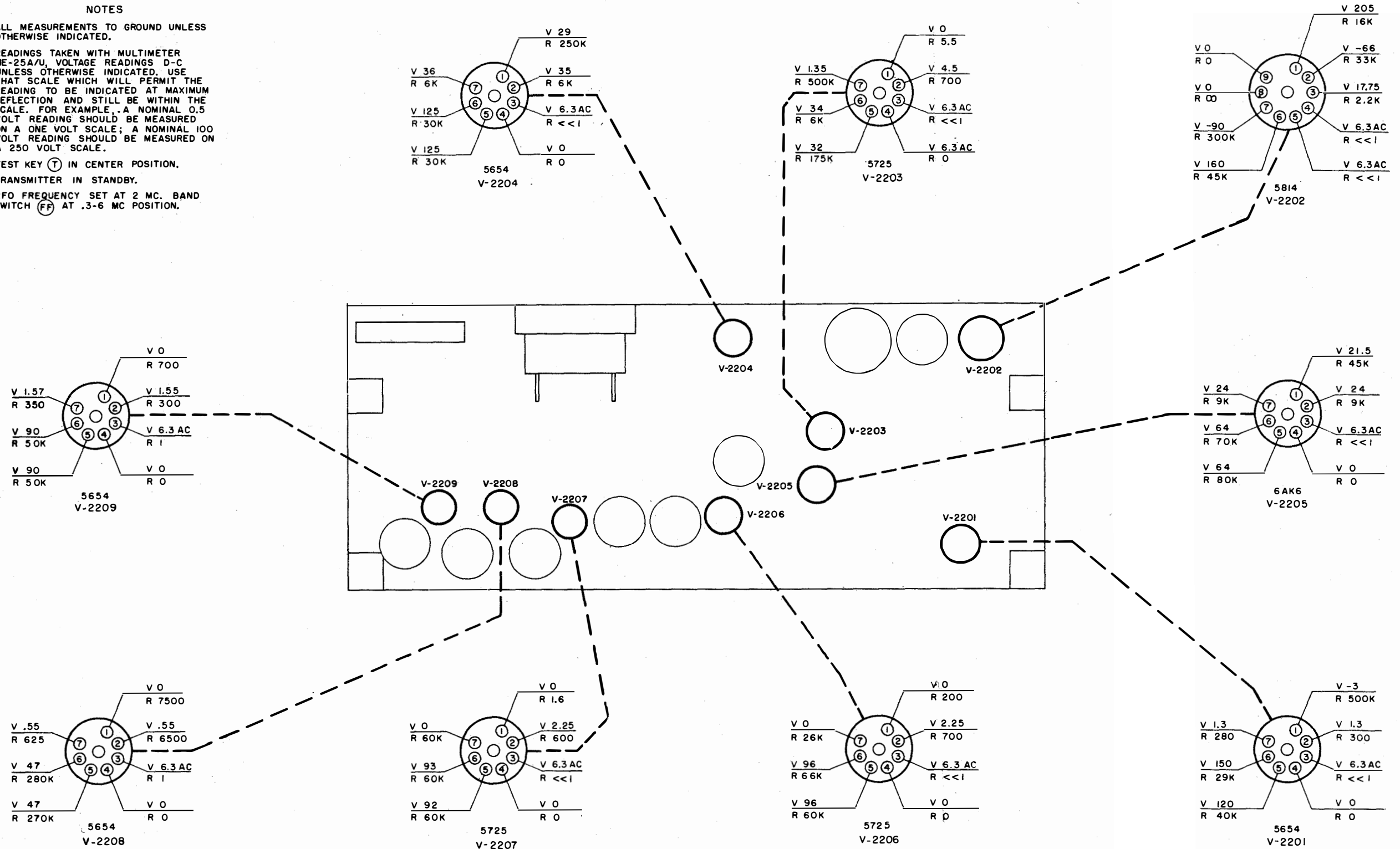


Figure 7-30. RFO, Unit 6 (Z-2204), Voltage and Resistance Chart

NOTES

1. ALL MEASUREMENTS TO GROUND UNLESS OTHERWISE INDICATED.
2. READINGS TAKEN WITH MULTIMETER ME-25A/U, VOLTAGE READINGS D-C UNLESS OTHERWISE INDICATED. USE THAT SCALE WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE, A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON A ONE VOLT SCALE; A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON A 250 VOLT SCALE.
3. TEST KEY (T) IN CENTER POSITION.
4. TRANSMITTER IN STANDBY.
5. RFO FREQUENCY SET AT 2 MC. BAND SWITCH (FF) AT .3-6 MC POSITION.

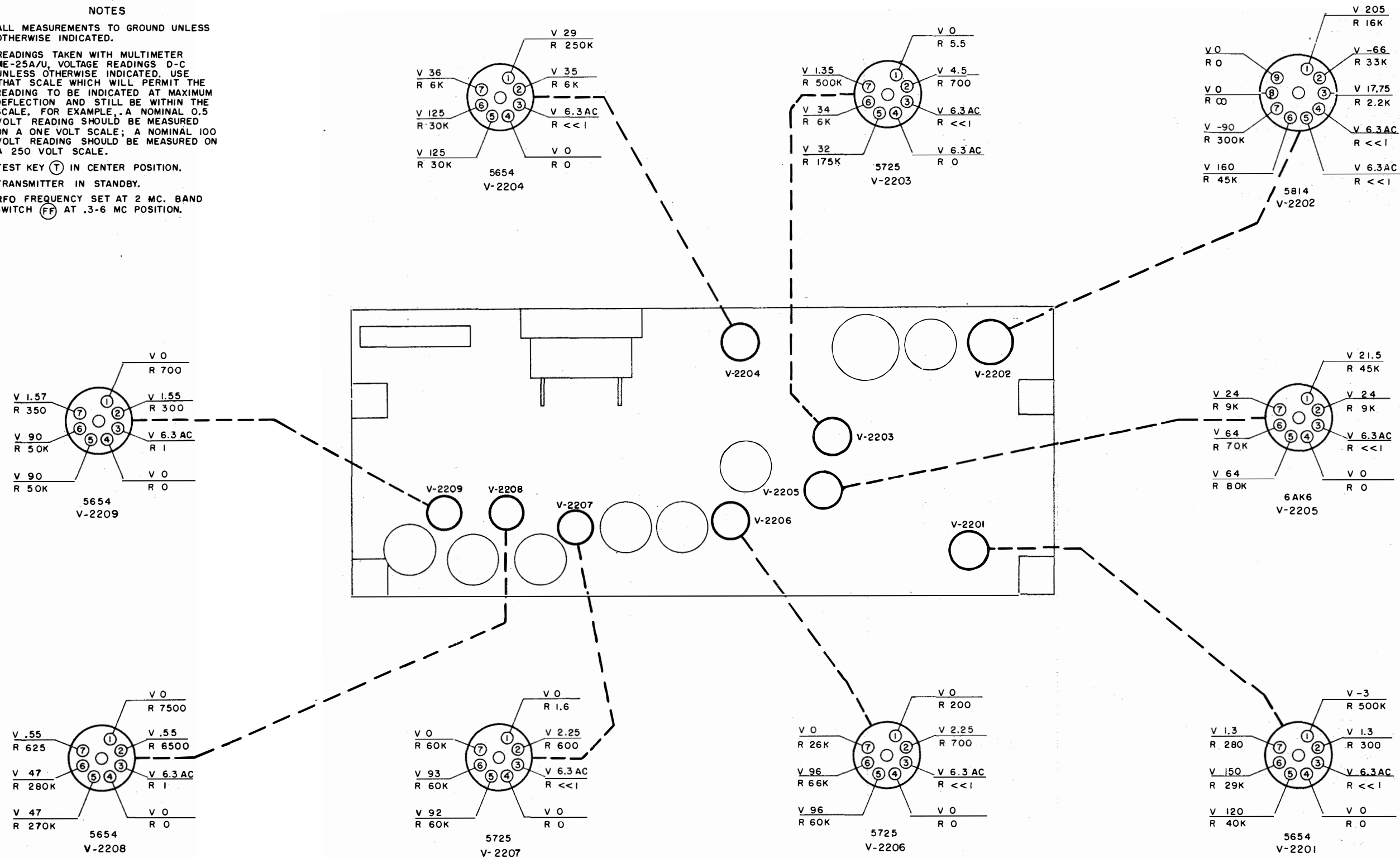


Figure 7-30. RFO, Unit 6 (Z-2204), Voltage and Resistance Chart

**CORRECTIVE
MAINTENANCE**

**NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A**

**Section 7
Paragraph 5 o (1) (g)**

next small peak (approximately 70 db down) at a frequency of 10.485 mc.

signal strength on "S" meter. If necessary, adjust C-2212 as in step 6 above.

Step 6. Adjust C-2212 until this peak is at a minimum, as observed on the receiver "S" meter.

Step 7. Tune receiver to 10.505 mc and observe

Note

The best possible balance should be obtained between steps 6 and 7.

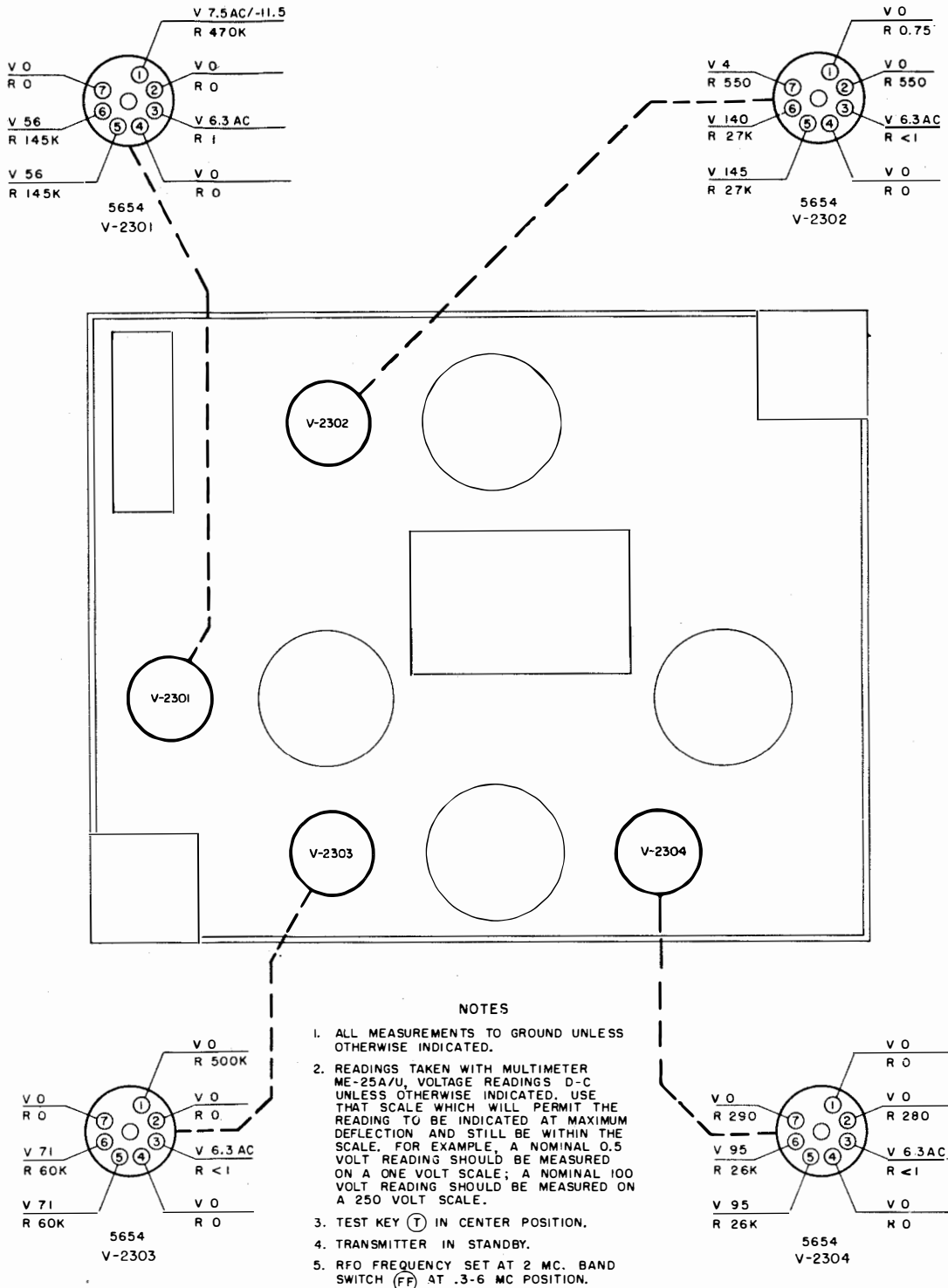


Figure 7-31. RFO, Unit 7 (Z-2305), Voltage and Resistance Chart

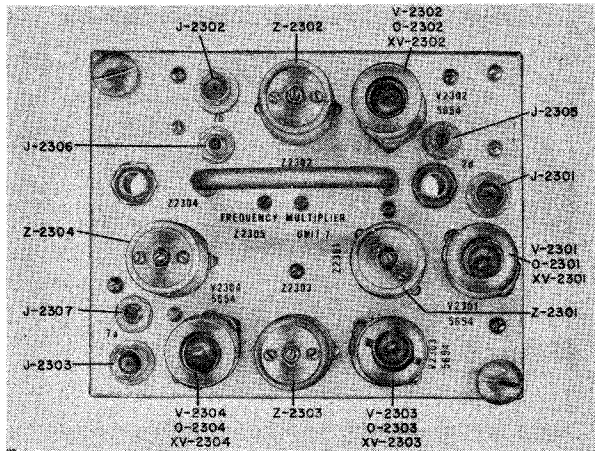


Figure 7-32. RFO, Unit 7 (Z-2305), Top View

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—The following steps should be taken to remove unit 6 from the mounting (unit 14):

Step 1. Turn knob (J) to indicate position 0.

Step 2. Check that red dots on unit 6 coupler are facing outward.

Step 3. Disconnect the six cables plugged into unit 6.

Step 4. Loosen the four 1/4-turn cowl fasteners.

Step 5. Using handles, pull unit 6 slowly and straight out until its plug and coupler are disengaged.

CAUTION

When removing unit 6, pull handles slowly so as not to damage pins on connecting plug. Do not apply any chemicals to the trimmer capacitors on S-2201.

(b) REPLACEMENT AND ADJUSTMENTS.

—To replace unit 6, set shaft indicator on unit to position 0. Check that knob (J) is in position 0. Push unit 6 in slowly until coupler engages and plug is properly seated. Tighten the four cowl fasteners. Connect the six cables to the proper jacks on unit 6.

CAUTION

Do not force unit 6 into position. Forcing may cause the pins on its connecting plug to be damaged. Be sure that both switch S-2201 and knob (J) indicate the same position.

Note

When replacing unit 6 with a new unit 6, it may be necessary to loosen the power plug mounting screws and the chassis guide bushing nuts to effect proper alignment on unit 14 mounting. After proper alignment be sure to

tighten the power plug screws and guide bushing nuts.

p. FREQUENCY MULTIPLIER, UNIT 7 (Z-2305), TROUBLE SHOOTING.—The frequency multiplier (unit 7) has two outputs. Signal 7a (15 mc) can be checked at test point 7a. Signal 7b (5 mc) can be checked at test point 7b. Refer to table 7-14 for nominal r-f voltage at test points.

TABLE 7-14. UNIT 7, R-F VOLTAGE AT TEST POINTS

| TEST POINT | NOMINAL VOLTAGE |
|------------|-----------------|
| 7a | 1.0 |
| 7b | 1.4 |
| 2d | 7.5 |

If only signal 7b is present, check tubes V-2303 (5654) and V-2304 (5654). If only signal 7a is present, check tube V-2302 (5654). If neither output is present, check tube V-2301 (5654). Use the trouble location diagram, figure 7-120, the schematic diagram, figure 7-135, the wiring diagram, figure 7-136, and the voltage and resistance chart, figure 7-31, to locate the faulty component.

q. FREQUENCY MULTIPLIER, UNIT 7 (Z-2305), REPAIR AND ADJUSTMENTS.

(1) ELECTRICAL ADJUSTMENTS.—In unit 7, the eight adjustments that may be made are the top and bottom slugs of Z-2301, Z-2302, Z-2303, and Z-2304 (figures 7-32 and 7-33).

Note

These eight are *factory adjustments* and should *not* be tampered with unless a transformer is replaced or an adjustment becomes loose.

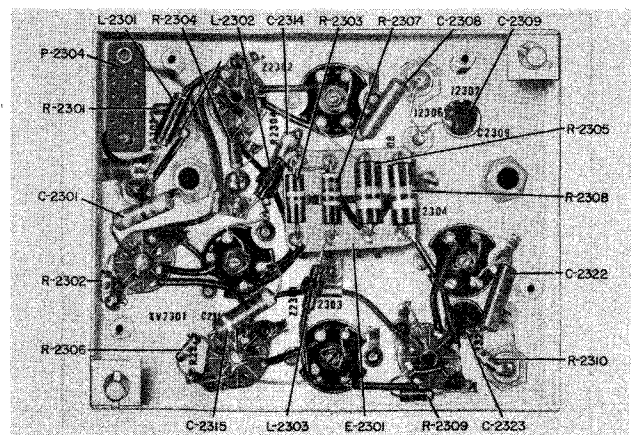
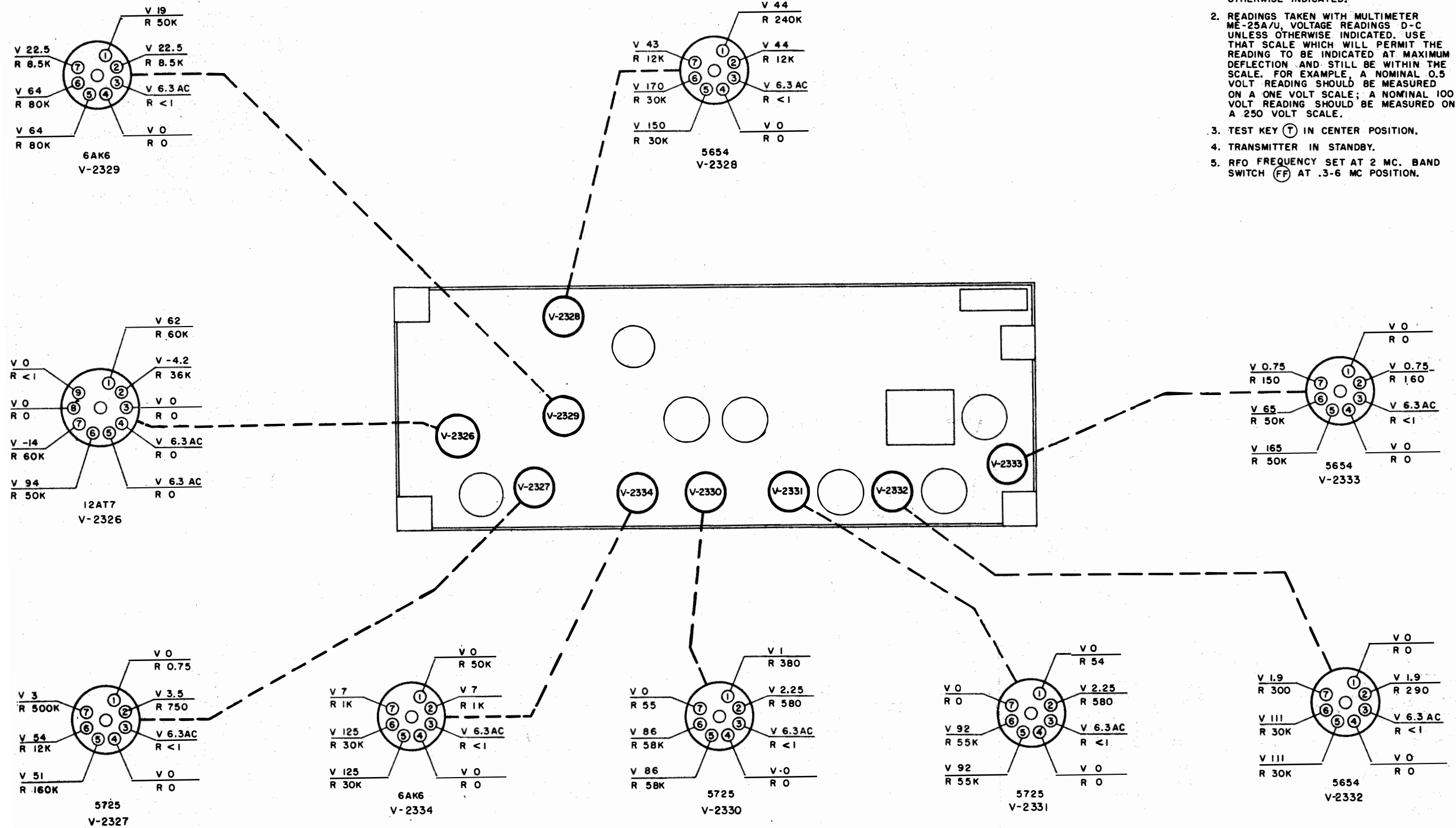


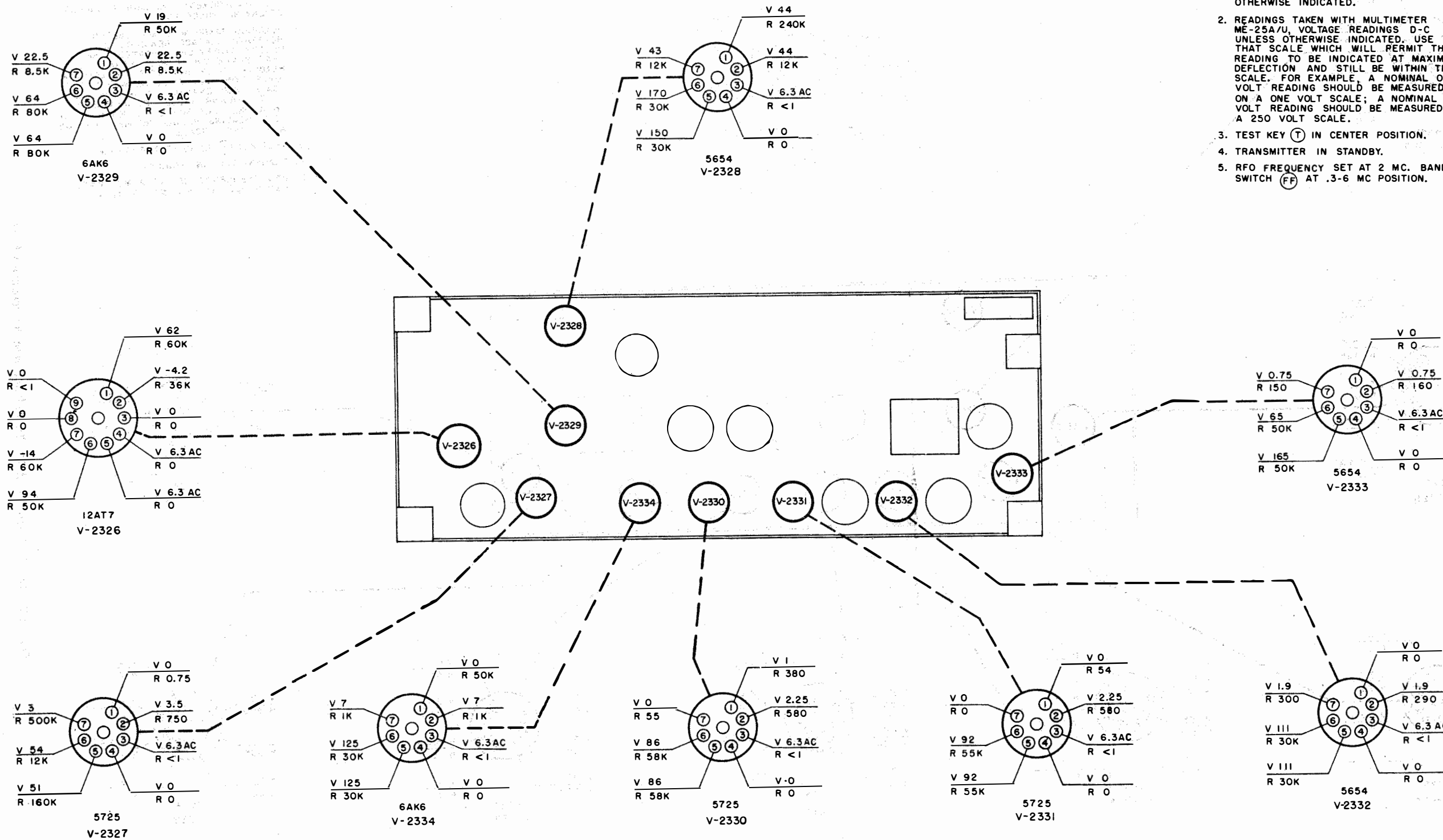
Figure 7-33. RFO, Unit 7 (Z-2305), Cover Removed, Bottom View



NOTES

1. ALL MEASUREMENTS TO GROUND UNLESS OTHERWISE INDICATED.
2. READINGS TAKEN WITH MULTIMETER ME-25A/U, VOLTAGE READINGS D-C UNLESS OTHERWISE INDICATED. USE THAT SCALE WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE, A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON A ONE VOLT SCALE; A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON A 250 VOLT SCALE.
3. TEST KEY (T) IN CENTER POSITION.
4. TRANSMITTER IN STANDBY.
5. RFO FREQUENCY SET AT 2 MC. BAND SWITCH (FF) AT .3-6 MC POSITION.

Figure 7-34. RFO, Unit 8 (Z-2330), Voltage and Resistance Chart



NOTES

1. ALL MEASUREMENTS TO GROUND UNLESS OTHERWISE INDICATED.
2. READINGS TAKEN WITH MULTIMETER ME-25A/U, VOLTAGE READINGS D-C UNLESS OTHERWISE INDICATED. USE THAT SCALE WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON A ONE VOLT SCALE; A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON A 250 VOLT SCALE.
3. TEST KEY (T) IN CENTER POSITION.
4. TRANSMITTER IN STANDBY.
5. RFO FREQUENCY SET AT 2 MC. BAND SWITCH (FF) AT .3-6 MC POSITION.

Figure 7-34. RFO, Unit 8 (Z-2330), Voltage and Resistance Chart

Since unit 7 is located on the top of the RFO, the top slugs may be adjusted without removing unit 7 from the mounting. Pull RFO drawer all the way out and remove its top cover.

Note

Do not make these adjustments until units 1 and 2 are properly aligned.

Step 1. Place equipment in stand-by condition, switch $\text{\textcircled{P}}$ in STANDBY.

Step 2. Connect Multimeter ME-25A/U (or equivalent) to jack 7b, using 2.5-volt scale with r-f probe.

Step 3. Adjust top slugs of Z-2301 and Z-2302 for maximum reading on meter.

Step 4. Place unit 7 on an extension test cable, and adjust the bottom slugs of Z-2301 and Z-2302 for a maximum reading on Multimeter ME-25A/U. Refer to Section 1 for extension test cable fabrication instructions.

Step 5. Connect multimeter to jack 7a and leave meter on 2.5-volt scale.

Step 6. Connect the extension cable to unit 7 and adjust the bottom slugs of Z-2303 and Z-2304, for maximum reading on multimeter. Apply glyptal to the top slugs of Z-2301 through Z-2304.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—Unit 7 may be removed by turning the two 1/4-turn cowl fasteners and removing the three cables connected to the chassis. Use handle to remove unit 7 from mounting.

CAUTION

Pull handle slowly and straight up so as not to bend the pins on the connecting plug.

(b) REPLACEMENT AND ADJUSTMENTS.

—To replace unit 7, line up guide holes on unit with guide pins on mounting. Push down until properly seated, and tighten the two cowl fasteners. Connect three cables to proper jacks on unit 7.

CAUTION

Do not force unit 7 into position. Forcing may damage the pins on its connecting plug.

No adjustments are required on unit 7, unless Z-2301, Z-2302, Z-2303, or Z-2304 is replaced. When replacing any one of these transformers, adjust its top and bottom slugs; refer to paragraph 5q(1).

Note

When replacing unit 7 with a new unit 7, it may be necessary to loosen the power plug mounting screws and the chassis guide bushing nuts to effect proper alignment on unit 14 mounting. After proper alignment, be sure

to tighten the power plug screws and guide bushing nuts.

7. ELECTRONIC FREQUENCY CONVERTER, UNIT 8 (Z-2330), TROUBLE SHOOTING.—The electronic frequency converter (unit 8) has three inputs and two outputs. Input signal 1d can be checked at test point 1d, signal 7a at test point 7a, and signal 6b at test point 6b. Refer to table 7-15 for nominal r-f voltages at test points. Output signal 8a (1.6 mc and 2.5 mc in 100-kc steps) can be checked by means of an oscilloscope or multimeter by connecting to jack 100 KC STEP on the RFO front panel. Output signal 8b can be checked at test point 8b. If signal 8b is present but 8a is not, check tube V-2334 (6AK6).

TABLE 7-15. UNIT 8, R-F VOLTAGE AT TEST POINTS

| TEST POINT | NOMINAL VOLTAGE |
|-------------------------------------|-----------------|
| 1d | 13.5 |
| 7a | 1.0 |
| 6b | 0.7 |
| 8b | 1.0 |
| (8a) 100 KC STEP jack on RFO panel. | 0.8 |

A stage-by-stage r-f voltage measurement of unit 8 can be made by means of Multimeter ME-25A/U (or equivalent), using the r-f probe. If there is no output, use the trouble location diagram, figure 7-120, the schematic diagram, figure 7-137, the wiring diagram, figure 7-138, and the voltage and resistance chart, figure 7-34.

8. ELECTRONIC FREQUENCY CONVERTER, UNIT 8 (Z-2330) REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—All the adjustments on unit 8 are factory adjustments with the exception of C-2339. The factory adjustments should *not* be tampered with unless the adjustable component has been changed or complete alignment is required because of poor operation of unit 8 as determined by the trouble location method outlined in figure 7-120.

(a) C-2339 ADJUSTMENT.—Whenever V-2327, V-2328, or V-2329 is replaced, variable capacitor C-2339 (figure 7-35) must be adjusted in the following manner:

Note

C-2339 may be adjusted without removing unit 8 from the mounting. Unit 1 must be properly aligned before making this adjustment.

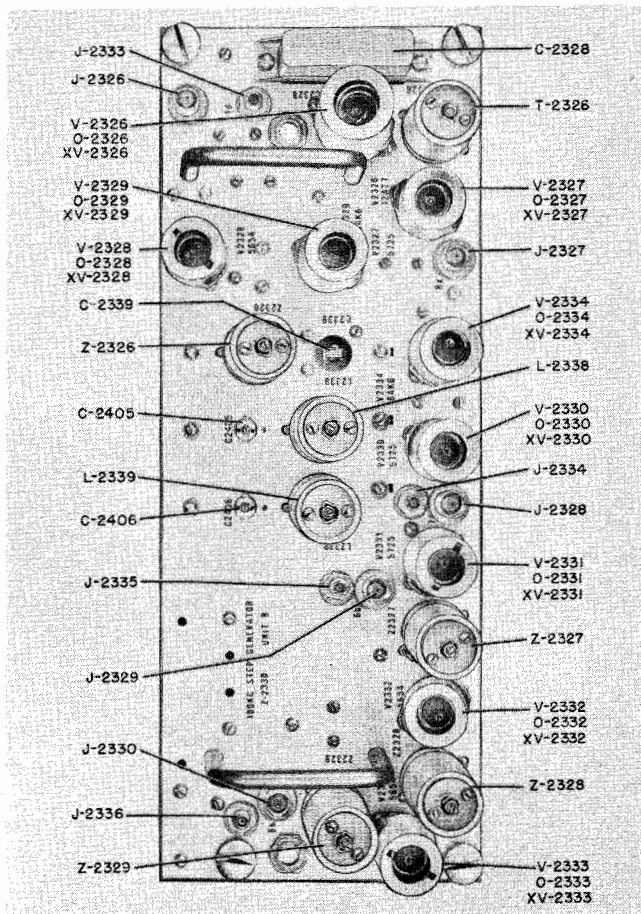


Figure 7-35. RFO, Unit 8 (Z-2330), Top View

Step 1. Place switch \textcircled{P} in STANDBY.

Step 2. After proper warm-up (1 hour) for ovens and filaments, place frequency selection knob \textcircled{H} to position 9. Positions of other knobs are immaterial.

Step 3. Connect a cable from 100 KC X-TAL jack on RFO front panel to the vertical input of Oscilloscope OS-8A/U (or equivalent).

Step 4. Connect a cable from the 100 KC STEP jack on RFO front panel to the horizontal input of the oscilloscope.

Step 5. Adjust C-2339 for a stable 25:1 Lissajous pattern on the oscilloscope screen.

Step 6. Rotate C-2339 clockwise until the pattern breaks up. Turn C-2339 back until the 25:1 pattern reappears. Mark position of adjustment slot.

Step 7. Rotate C-2339 counterclockwise until the pattern breaks up again. Turn C-2339 back until the 25:1 pattern reappears. Mark position of adjustment slot.

Step 8. Set C-2339 adjustment slot at a midpoint between the two markings.

Step 9. If the correct pattern was obtained in steps 1-9, other positions of switch S-2326 (knob \textcircled{H}) may

be checked by observing the Lissajous patterns as indicated in table 7-2.

Note

No adjustments should be made in this check. If any switch position does not produce the correct Lissajous pattern, proceed with the alignment of switch S-2326.

(b) T-2326 ADJUSTMENT.—The two adjustments of ringing coil T-2326, top and bottom slugs, are factory adjustments and should not be tampered with unless T-2326 is replaced or an adjustment becomes loose. Unit 8 must be removed from the mounting and placed on extension test cables for these adjustments. See paragraph 5s(2)(a).

For a rough adjustment of T-2326, the top and bottom slugs are turned in an equal distance and touch each other.

For a more efficient alignment of T-2326, connect Oscilloscope OS-8A/U (or equivalent) between pins 1 and 4 of T-2326, with a 1/2-megohm, 1/2-watt resistor used to isolate the oscilloscope test probe. Adjust the bottom, then the top slugs of T-2326 for maximum positive pulse with minimum ringing.

(c) S-2326 STEP OSCILLATOR ADJUSTMENTS.—Whenever a complete alignment of the 100-kc step switch, S-2326, is required, adjustments Z-2326 and C-2339 (on top of the unit 8 chassis) and L-2327 through L-2335 (adjusted through access holes marked G0 through G8, respectively, at the front of switch S-2326) will require adjustment.

Note

The 100-kc step switch adjustments are factory adjustments and should not be tampered with unless absolutely necessary. These adjustments cannot be made unless unit 1 and T-2326 (unit 8) are properly aligned.

These adjustments are made in the following manner, with unit 8 removed from the mounting and placed on extension test cables. Allow sufficient warm-up for ovens and filaments (until oven lights cycle 1 hour).

Step 1. Turn S-2326 to position 9 (2.5 mc).

Step 2. Connect a cable from 100 KC X-TAL jack on RFO front panel to the vertical input of Oscilloscope OS-8A/U, or equivalent.

Step 3. Connect a cable from 100 KC STEP jack (output 8a) to the horizontal input of the oscilloscope, and place equipment in STANDBY condition.

Step 4. Set C-2339 to half capacity position (adjustment slot parallel with the two capacitor mounting screws).

Step 5. Adjust Z-2326 for a 25:1 Lissajous pattern.

Step 6. Rotate Z-2326 clockwise until the pattern unlocks, and then counterclockwise until it locks in again.

Step 7. Rotate Z-2326 counterclockwise until the pattern unlocks, and then clockwise until the pattern locks in again. Note the number of turns through the "lock-in" range of the oscillator and set Z-2326 at the midrange point.

Step 8. For the positions 8 through 0 of S-2326, use table 7-16. Turn slugs of inductors clockwise until oscillator unlocks, then turn slowly counterclockwise until the oscillator locks at Lissajous pattern count indicated in table 7-16.

Step 9. Turn slugs counterclockwise until oscillator unlocks, then turn slowly clockwise until the oscillator locks in again. Note the number of turns through the "lock-in" range of the oscillator and set the slugs at the midrange point.

Step 10. Glyptal has been applied to all critical adjustments of unit 8. Reapply glyptal to any of these adjustments that have been moved.

(d) S-2326 STEP FILTER ADJUSTMENTS.—Whenever a component is replaced in the 100-kc step filter circuit, or a complete alignment of unit 8 is re-

**TABLE 7-16. UNIT 8, 100-KC STEP
OSCILLATOR ADJUSTMENTS**

| POSITION OF S-2326 | ADJUSTMENT | ADJUSTMENT LABEL | LISSAJOUS PATTERN |
|--------------------|------------|------------------|-------------------|
| 8 | L-2335 | G8 | 24:1 |
| 7 | L-2334 | G7 | 23:1 |
| 6 | L-2333 | G6 | 22:1 |
| 5 | L-2332 | G5 | 21:1 |
| 4 | L-2331 | G4 | 20:1 |
| 3 | L-2330 | G3 | 19:1 |
| 2 | L-2329 | G2 | 18:1 |
| 1 | L-2328 | G1 | 17:1 |
| 0 | L-2327 | G0 | 16:1 |

quired, the 16.6-17.5-mc filter adjustments (100-kc steps), L-2338, L-2339, C-2405, and C-2406 (located on the top of unit 8 chassis), and C-2362 through C-2370 (marked F0 through F8, respectively, at the rear of S-2326), and C-2371 through C-2379 (marked E0 through E8, respectively, at the rear of S-2326) will require adjustment.

Note

The 100-kc filter adjustments are factory adjustments and should not be tampered with unless absolutely necessary. These adjustments cannot be made unless units 1, 2, 7 and the other sections of unit 8 have been properly aligned.

It is assumed that unit 8 is still removed from the mounting and connected by extension test cables.

Step 1. Place S-2326 to position 9. Positions of other knobs immaterial.

Step 2. Connect Multimeter ME-25A/U or equivalent) to pin 7 of mixer tube V-2331 and ground, with meter on the 2.5-volt scale. Place equipment in STANDBY condition.

Step 3. After proper warm-up (until oven lights cycle 1 hour) for ovens and filaments, adjust in sequence L-2338, C-2405, L-2339, and C-2406 (on top of unit 8 chassis) to obtain a peak reading on the multimeter.

Step 4. Place switch S-2326 to position 8, and following the sequence in table 7-17, adjust the corresponding variable filter capacitors, using the special insulated screwdriver, for the remaining positions of switch S-2326. A peak reading should be obtained for each adjustment.

(e) Z-2327, Z-2328, Z-2329 ADJUSTMENT.—The 27-28-mc filter adjustments are the top and bottom slugs of transformers Z-2327, Z-2328, and Z-2329 (figures 7-35 and 7-36).

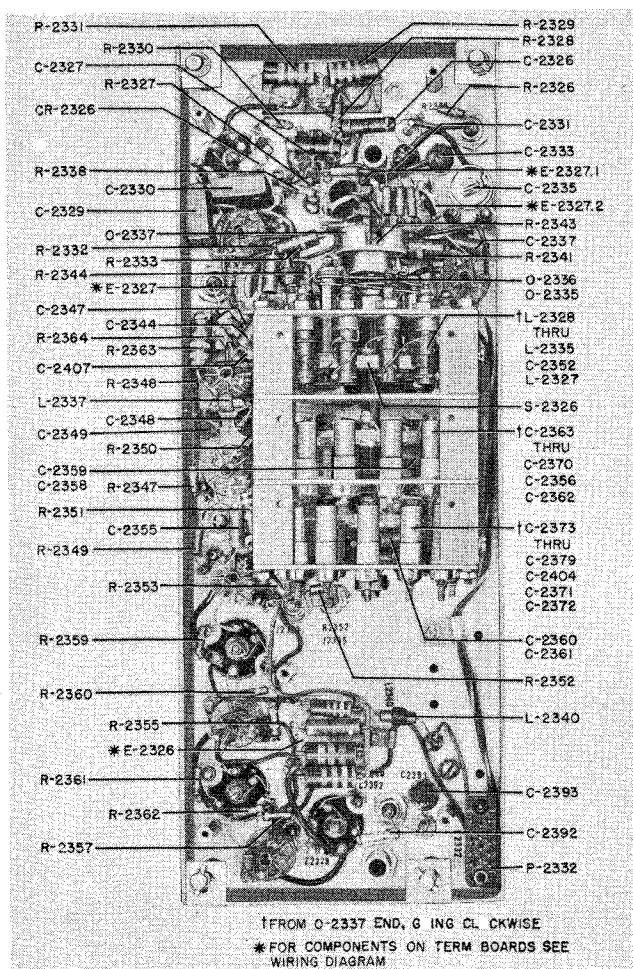


Figure 7-36. RFO, Unit 8 (Z-2330), Covers Removed, Bottom View

Note

These are factory adjustments and should not be tampered with unless absolutely necessary. Units 1, 2, 3, 4, 5, 6, 7, and the other sections of unit 8 must be properly aligned before making these adjustments. Allow proper warm-up (until ovens have been cycling for 1 hour) for ovens and filaments.

Note

This is a factory adjustment and should not be tampered with unless absolutely necessary.

Use a calibrated receiver, containing an "S" meter and capable of giving a minimum of 70-db attenuation at 100 kc away from the desired frequency of 27 to 28 mc. Use attenuators to limit the input to the receiver.

TABLE 7-17. UNIT 8, 100-KC STEP FILTER ADJUSTMENTS

| POSITION OF S-2326 | ADJUSTMENT | ADJUSTMENT LABEL |
|--------------------|------------------|------------------|
| 8 | C-2370 C-2379 | F8 E8 |
| 7 | C-2369 C-2378 | F7 E7 |
| 6 | C-2368 C-2377 | F6 E6 |
| 5 | C-2367 C-2376 | F5 E5 |
| 4 | C-2366 C-2375 | F4 E4 |
| 3 | C-2365 C-2374 | F3 E3 |
| 2 | C-2364 C-2373 | F2 E2 |
| 1 | C-2363 C-2372 | F1 E1 |
| 0 | C-2362 C-2371 | E0 F0 |

Step 1. On unit 8, remove cables from receptacles 1d, 7a and 6b.

Step 2. Connect the RF OUTPUT X MULT terminal of signal generator AN/URM-25 to jack 6b.

Step 3. Tune the signal generator to 28 mc and energize the transmitter.

Step 4. Connect the a-c probe of Multimeter ME-25A/U to test point 8b (J-2336).

Step 5. With maximum r-f output from the signal generator, adjust bottom slugs of Z-2327, Z-2328, and Z-2329 (see figure 7-35) for maximum voltage indication on the multimeter.

Step 6. Retune the signal generator to 27 mc and adjust the top slugs of Z-2327, Z-2328, and Z-2329 (see figure 7-35) for maximum voltage indication on the multimeter.

Step 7. Apply glyptal to the top slugs of Z-2327, Z-2328, and Z-2329.

(f) 100-KC TRAP ADJUSTMENT.—The adjustment for the 100-kc trap is variable capacitor C-2335.

Step 1. Place equipment in STANDBY condition. It is assumed that unit 8 is still removed from the mounting and connected by means of extension test cables.

Step 2. After proper warm-up (until oven lights cycle for 1 hour), place switch S-2326 to position 9, and the RFO front panel knob (J) to position 5. All other knobs to position 0.

Step 3. Disconnect cable to jack 8b (J-2330) on unit 8, and in its place connect the input to the receiver.

Step 4. Tune the receiver to the output frequency of unit 8 (27.950 mc).

Step 5. Retune the receiver very slowly for the next small peak (approximately 70 db down) at a frequency of 27.850 mc.

Step 6. Adjust C-2335 until this peak is at a minimum.

Step 7. Tune receiver to 28.050 mc and observe signal strength on "S" meter. If necessary, adjust C-2335 as in step 6 above.

Note

The best possible balance should be obtained between steps 6 and 7.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—Perform the following procedures to remove unit 8 from the mounting:

Step 1. Turn knob (H) to position 0.

Step 2. Disconnect cables connected to unit 8.

Step 3. Loosen cowl fasteners.

Step 4. Pull unit 8 slowly and straight out by the two handles until the plug and coupler are disengaged.

CAUTION

Use care in removing unit 8 from mounting so as not to damage pins on connecting plug.

(b) REPLACEMENT AND ADJUSTMENTS.—To replace unit 8, set knob (H) at position 0. Check that red dot on coupler faces out away from mounting. Be sure shaft indicator (red pointer) on unit 8 is also set on 0. Line up guide holes on unit 8 with guide pins on unit 14 mounting. Tighten cowl fasteners, and connect cables to proper jacks on unit 8.

CAUTION

Do not force unit 8 into position. Forcing may damage S-2326 coupler or pins on connecting plug.

Note

When replacing unit 8 with a new unit 8, it may be necessary to loosen the power plug mounting screws and the chassis guide bushing nuts to effect proper alignment on unit 14 mounting. After proper alignment, be sure to tighten the power plug screws and guide bushing nuts.

t. **ELECTRONIC FREQUENCY CONVERTER, UNIT 9 (Z-2426), TROUBLE SHOOTING.**—The electronic frequency converter, unit 9 (figures 7-37 and 7-38), has two inputs and one output. Table 7-19 lists the final output frequencies of unit 9 and respective knob positions. The nominal r-f voltage may be measured at the test points on unit 9, by means of Multimeter ME-25A/U, using the r-f probe (table 7-18).

TABLE 7-18. UNIT 9, R-F VOLTAGE AT TEST POINTS

| TEST POINT | NOMINAL VOLTAGE VOLTAGE VARIES APPROXIMATELY $\pm 20\%$ WITH SETTING OF KNOB Ⓜ |
|------------|---|
| 7b | 1.3 |
| 8b | 0.9 |
| 9 | 1.6 |

If there is no output, as indicated in table 7-18, use the trouble location diagram, figure 7-120, the schematic diagram, figure 7-139, the wiring diagram, figure 7-140, the voltage resistance chart, figure 7-39, and output frequency chart, table 7-19, to locate the fault.

u. **ELECTRONIC FREQUENCY CONVERTER, UNIT 9 (Z-2426), REPAIR AND ADJUSTMENT.**

(1) **ELECTRICAL ADJUSTMENTS.**—All the adjustments on unit 9 are *factory adjustments* and should *not* be tampered with unless it is absolutely necessary.

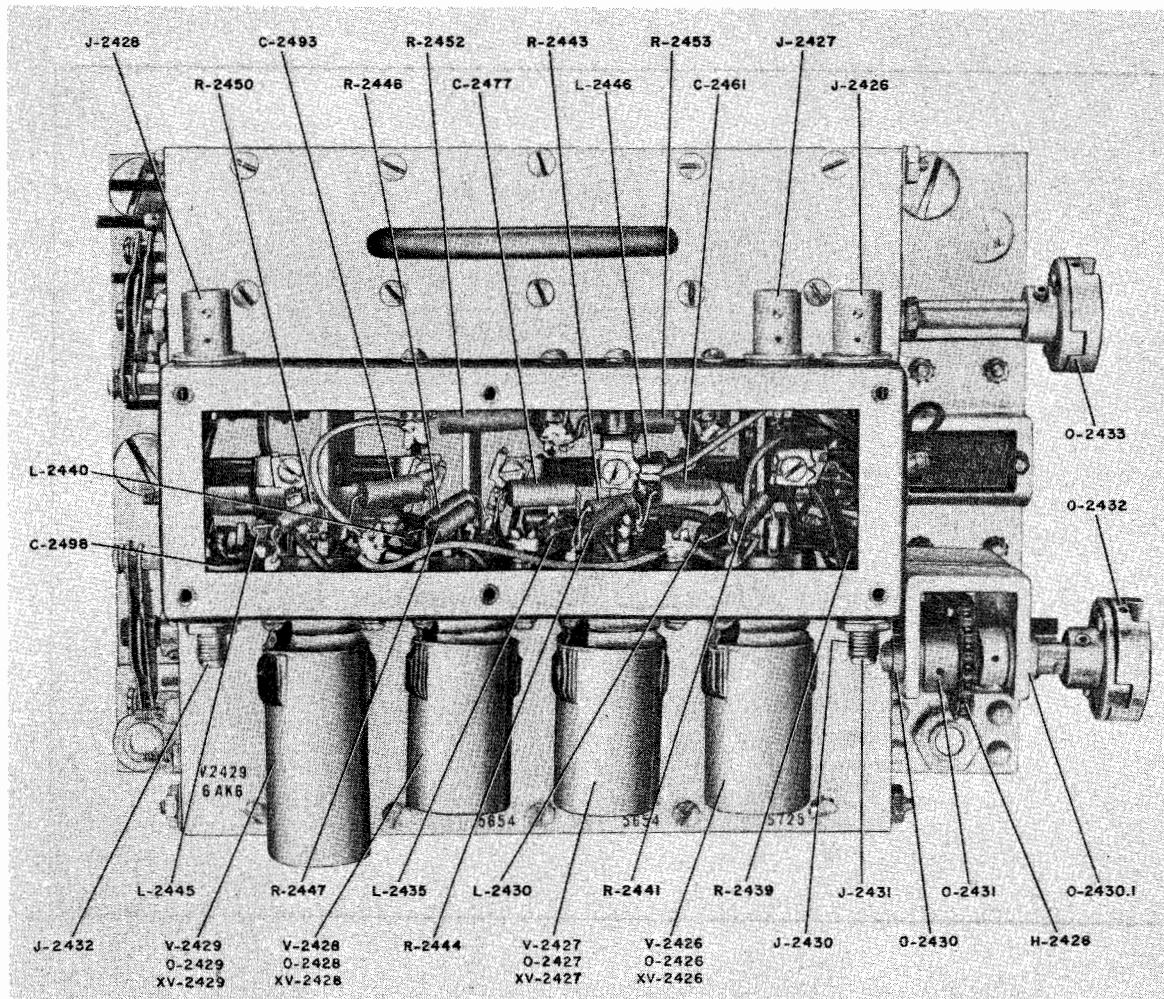


Figure 7-37. RFO, Unit 9 (Z-2426), Cover Removed, Left View

TABLE 7-19. RFO, FINAL OUTPUT FREQUENCIES AND Ⓐ, Ⓑ, Ⓕ AND Ⓒ KNOB POSITIONS

| OUTPUT FREQUENCY (MC) | UNIT 9 | | UNIT 10 | | KNOB Ⓕ POSITION | KNOB Ⓒ | OUTPUT UNIT SELECTED |
|-----------------------------|---------------------------------|-----------------------------|---------------------------------|-----------------------------|-----------------------|-----------|----------------------------|
| | KNOB Ⓐ POSITION S-2426 | OUTPUT FREQUENCY (MC) | KNOB Ⓑ POSITION S-2526 | OUTPUT FREQUENCY (MC) | | | |
| 0.3-1 | 0 | 22-23 | 10 | 22 | 0.3-6 mc | * | 11A |
| 1-2 | 0 | 22-23 | 9 | 21 | | * | |
| 2-3 | 0 | 22-23 | 8 | 20 | | * | |
| 3-4 | 0 | 22-23 | 7 | 19 | | * | |
| 4-5 | 0 | 22-23 | 6 | 18 | | * | |
| 5-6 | 1 | 27-28 | 10 | 22 | | * | |
| 6-7 | 0 | 22-23 | 4 | 16 | 6-16 mc | 6 | 11B |
| 7-8 | 1 | 27-28 | 8 | 20 | | 7 | |
| 8-9 | 0 | 22-23 | 3 | 14 | | 8 | |
| 9-10 | 0 | 22-23 | 2 | 13 | | 9 | |
| 10-11 | 1 | 27-28 | 5 | 17 | | 0 | |
| 11-12 | 1 | 27-28 | 4 | 16 | | 1 | |
| 12-13 | 2 | 32-33 | 8 | 20 | | 2 | |
| 13-14 | 2 | 32-33 | 7 | 19 | | 3 | |
| 14-15 | 2 | 32-33 | 6 | 18 | | 4 | |
| 15-16 | 3 | 37-38 | 10 | 22 | | 5 | |
| 16-17 | 3 | 37-38 | 9 | 21 | 16-26 mc | 6 | 11C |
| 17-18 | 3 | 37-38 | 8 | 20 | | 7 | |
| 18-19 | 2 | 32-33 | 3 | 14 | | 8 | |
| 19-20 | 1 | 27-28 | 1 | 8 | | 9 | |
| 20-21 | 3 | 37-38 | 5 | 17 | | 0 | |
| 21-22 | 3 | 37-38 | 4 | 16 | | 1 | |
| 22-23 | 0 | 22-23 | 1 | 14 | | 2 | |
| 23-24 | 3 | 37-38 | 3 | 14 | | 3 | |
| 24-25 | 3 | 37-38 | 2 | 13 | | 4 | |
| 25-26 | 2 | 32-33 | 0 | 7 | | 5 | |

* In the 0.3-6-mc band, the position knob Ⓒ is immaterial.

TABLE 7-20. UNIT 9, 100-KC STEP
FILTER ADJUSTMENTS

| Position of Pointer on S-2427 | ADJUSTMENT | ADJUSTMENT LABEL |
|----------------------------------|------------|---------------------|
| 8 | C-2440 | C8 |
| | C-2456 | D8 |
| | C-2472 | E8 |
| | C-2487 | F8 |
| 7 | C-2439 | C7 |
| | C-2455 | D7 |
| | C-2471 | E7 |
| | C-2486 | F7 |
| 6 | C-2438 | C6 |
| | C-2454 | D6 |
| | C-2470 | E6 |
| | C-2485 | F6 |
| 5 | C-2437 | C5 |
| | C-2453 | D5 |
| | C-2469 | E5 |
| | C-2484 | F5 |
| 4 | C-2436 | C4 |
| | C-2452 | D4 |
| | C-2468 | E4 |
| | C-2483 | F4 |
| 3 | C-2435 | C3 |
| | C-2451 | D3 |
| | C-2467 | E3 |
| | C-2482 | F3 |

TABLE 7-20. UNIT 9, 100-KC STEP
FILTER ADJUSTMENTS (Cont'd.)

| Position of Pointer on S-2427 | ADJUSTMENT | ADJUSTMENT LABEL |
|----------------------------------|------------|---------------------|
| 2 | C-2434 | C2 |
| | C-2450 | D2 |
| | C-2466 | E2 |
| | C-2481 | F2 |
| 1 | C-2433 | C1 |
| | C-2449 | D1 |
| | C-2465 | E1 |
| | C-2480 | F1 |
| 0 | C-2432 | C0 |
| | C-2448 | D0 |
| | C-2464 | E0 |
| | C-2479 | F0 |

Unit 9 must be placed on a subunit extension test cable and transmitter must be in STANDBY to make these adjustments.

Note

Use the special insulated screwdriver supplied with the RFO for all of the adjustments on unit 9. Do not make these adjustments until units 1, 2, 3, 4, 5, 6, 7, and 8 are properly aligned.

Step 1. Place unit 9 on extension test cable, and connect following jacks on unit 9: 7b and 8b. Refer to Section 1 for extension test cable fabrication instructions.

Step 2. Set the slugs of capacitors C-2431 and C-2447 (labeled C and D at the front of S-2426) and C-2463 and C-2478 (labeled E and F at the rear of S-2426) at their midposition. Determine the midposition of the slugs by rotating the slugs first clockwise and then counterclockwise, counting the number of turns and setting slug at the midpoint.

Step 3. Set frequency selection knobs as follows: HH at 9, JJ at 4, CC at 5, DD and EE at 0. (Setting of other knobs immaterial.)

Step 4. Set (red pointer) indicator on unit 9 switches as follows: S-2426 at 3 and S-2427 at 9.

Step 5. Connect Multimeter ME-25A/U to test point 9 and place meter on the 2.5-volt scale, using r-f probe.

Step 6. Adjust the slugs of L-2429, L-2434, L-2439, and L-2444 (labeled C3, D3, E3, and F3, respectively, on S-2426) for a maximum meter reading.

Note

Adjustments labeled C0 through C8 and D0 through D8 are accessible at the front of S-2426 and S-2427. Adjustments labeled E0 through E8 and F0 through F8 are accessible at the rear of S-2426 and S-2427.

Step 7. Turn switch S-2427 on unit 9 to the positions listed in table 7-20 and, for each position, adjust the four corresponding capacitors on S-2427 for a maximum meter reading.

Step 8. Turn HH knob to 4, JJ knob to 4, CC knob to 5, and the DD and EE knobs to 0.

Step 9. Turn the (red pointer) indicator on switch S-2426 (unit 9) to the positions listed in table 7-21 and, for each position, adjust the four corresponding inductors on S-2426 for a maximum reading on the meter.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—To remove unit 9, set knobs AA and BB on the RFO front panel to position 0. Turn the four 1/4-turn cowl fasteners and

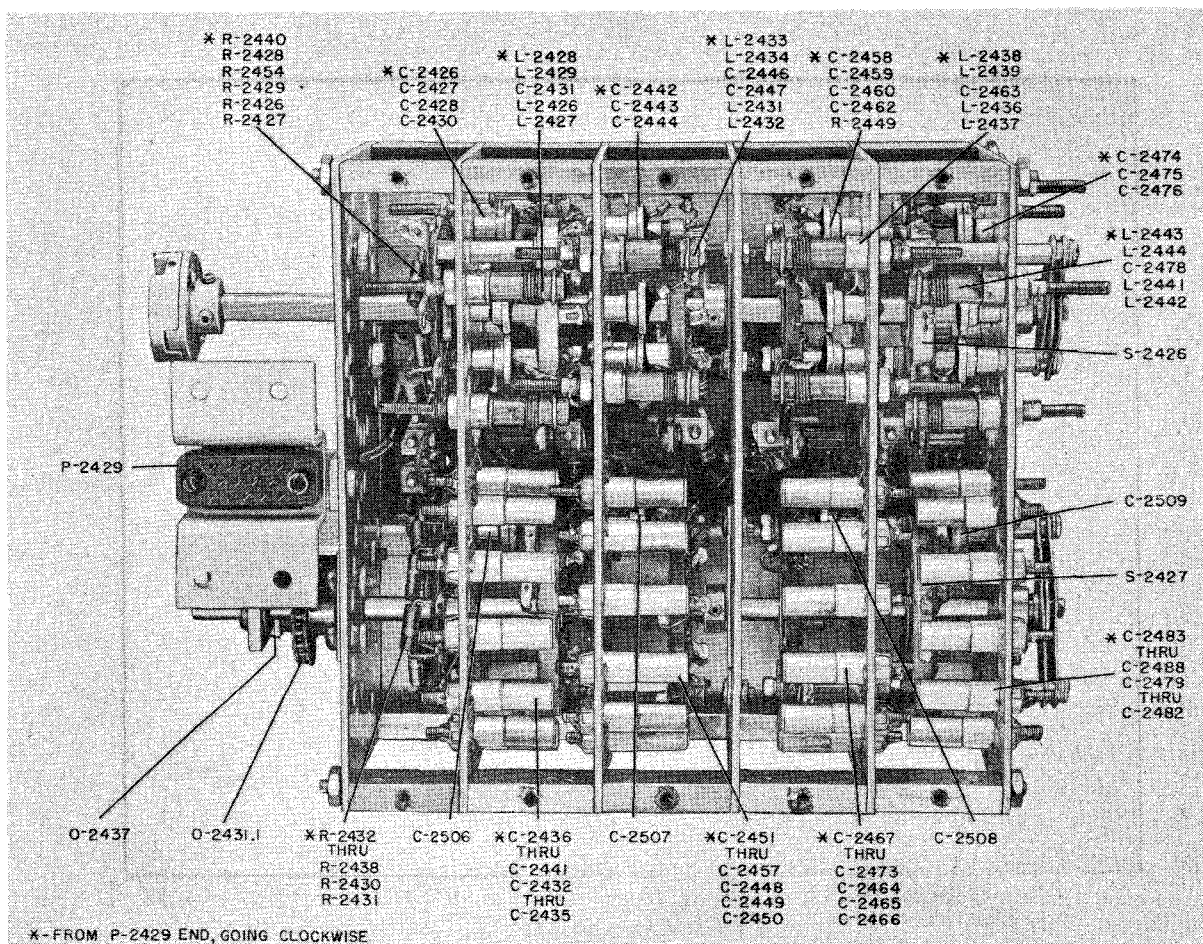
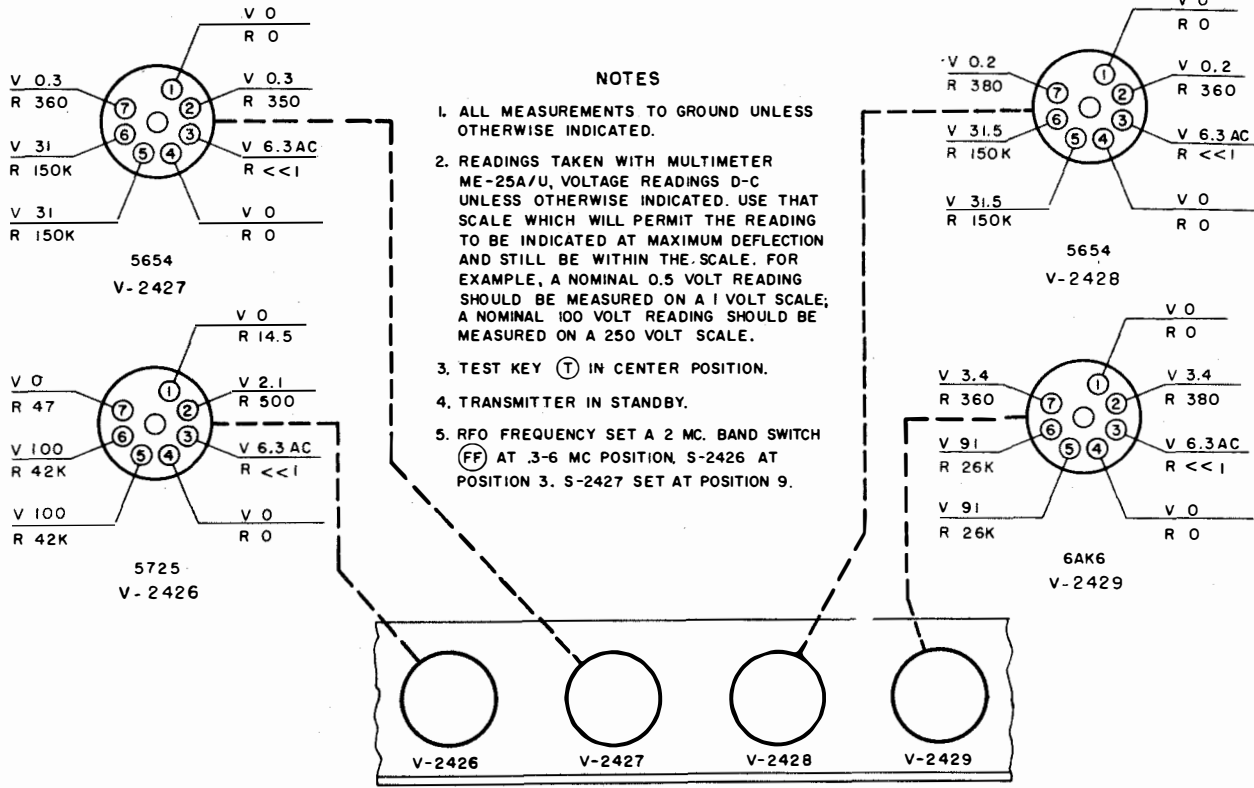


Figure 7-38. RFO, Unit 9 (Z-2426), Covers Removed, Right View



- NOTES**
1. ALL MEASUREMENTS TO GROUND UNLESS OTHERWISE INDICATED.
 2. READINGS TAKEN WITH MULTIMETER ME-25A/U, VOLTAGE READINGS D-C UNLESS OTHERWISE INDICATED. USE THAT SCALE WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE, A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON A 1 VOLT SCALE, A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON A 250 VOLT SCALE.
 3. TEST KEY (T) IN CENTER POSITION.
 4. TRANSMITTER IN STANDBY.
 5. RFO FREQUENCY SET A 2 MC. BAND SWITCH (FF) AT .3-6 MC POSITION, S-2426 AT POSITION 3. S-2427 SET AT POSITION 9.

SECTION A - A

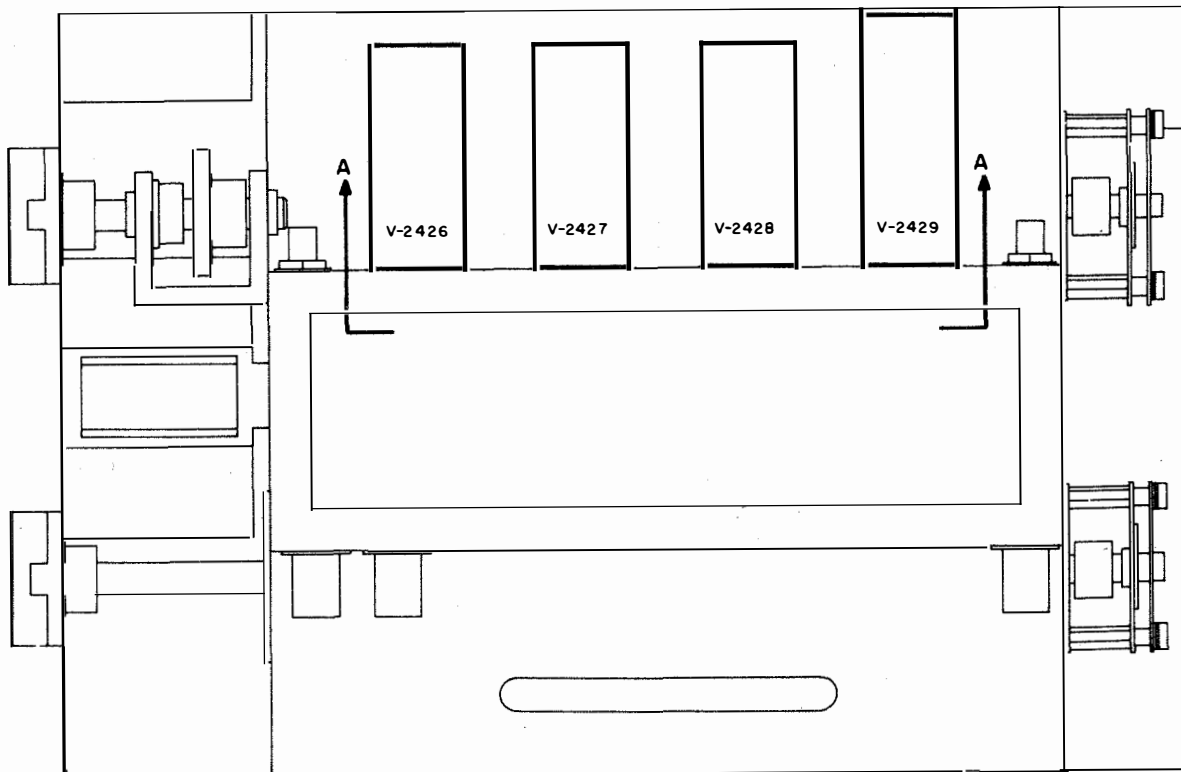


Figure 7-39. RFO, Unit 9 (Z-2426), Voltage and Resistance Chart

TABLE 7-21. UNIT 9, 5-MC STEP
FILTER ADJUSTMENTS

| Position of Pointer on S-2426 | ADJUSTMENT | ADJUSTMENT LABEL |
|-------------------------------|------------|------------------|
| 2 | L-2428 | C2 |
| | L-2433 | D2 |
| | L-2438 | E2 |
| | L-2443 | F2 |
| 1 | L-2427 | C1 |
| | L-2432 | D1 |
| | L-2437 | E1 |
| | L-2442 | F1 |
| 0 | L-2426 | C0 |
| | L-2431 | D0 |
| | L-2436 | E0 |
| | L-2441 | F0 |

remove the three cables connected to the chassis. Use the handles to pull the chassis from the mounting.

CAUTION

Pull handles slowly and straight out so as not to bend the pins on the connecting plug.

To gain access to the tube sockets, first remove the cover plate between the tubes and the jacks. This plate is held to the chassis by six machine screws. To reach the coils and capacitors used in the switching circuits, remove the remaining three cover plates.

CAUTION

Do not apply any chemicals to trimmer capacitors on S-2426 and S-2427.

The chain and sprocket assembly on unit 9 may be removed as follows (refer to figures 7-37 and 7-38):

Step 1. After unit 9 has been removed from unit 14 mounting, loosen idler assembly O-2437, and remove the three screws supporting the chain and sprocket assembly bracket.

Step 2. Loosen the setscrews in sprocket O-2431.1 on S-2427 switch shaft.

Note

Hex wrenches are mounted in clips on the right side of the RFO drawer. See figure 7-7.

Step 3. Remove assembly from unit 9.

(b) REPLACEMENT AND ADJUSTMENTS.

—Replace unit 9 as follows:

Step 1. Set control knobs Ⓐ and Ⓑ to position 0.

Step 2. Set red pointer on S-2426 and S-2427 of unit 9 also to position 0.

Step 3. Check that red dots on flexible couplers are facing outward.

Step 4. Line up guide holes and couplers on unit 9 with guide pins and couplers on unit 14.

Step 5. Push unit 9 in slowly until it is properly seated, and couplers are mating properly.

Step 6. Tighten cowl fasteners.

Step 7. Connect the three jacks on unit 9 with proper cables.

CAUTION

Do not force unit 9 into position. Forcing may damage the flexible couplers, shafts, or the pins on the connecting plug.

The chain and sprocket assembly is provided with an adjustable idler (O-2437). This idler should be adjusted to provide proper chain tension and minimize backlash. For lubrication information, refer to Section 6.

Note

When replacing unit 9 with a new unit 9, it may be necessary to loosen the power plug mounting screws and the chassis guide bushing nuts to effect proper alignment on unit 14 mounting. After proper alignment, be sure to tighten the power plug screws and guide bushing nuts.

When replacing a filter component in unit 9, adjust the slug as described in paragraph 5u (1).

v. FREQUENCY MULTIPLIER, UNIT 10 (Z-2526), TROUBLE SHOOTING.—The frequency multiplier (unit 10) receives a 1-mc signal (2e) from unit 2 which can be checked at test point 2e on unit 10. The output of unit 10 can be checked at test point 10 on unit 10 and also at test point 10a, 10b or 10c on unit 11A, 11B or 11C, respectively, depending on the position of BAND switch Ⓢ. Table 7-22 indicates nominal r-f voltages to be measured at the test points. Use Multimeter ME-25A/U with r-f probe.

TABLE 7-22. UNIT 10, R-F VOLTAGE
AT TEST POINTS

| TEST POINT | NOMINAL VOLTAGE |
|------------|-----------------|
| 2e | 7.5 |
| 10 | 0.5 |

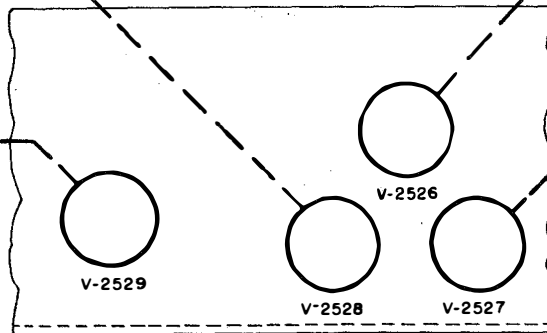
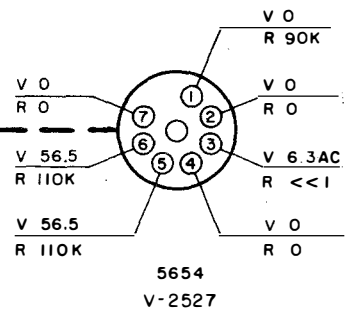
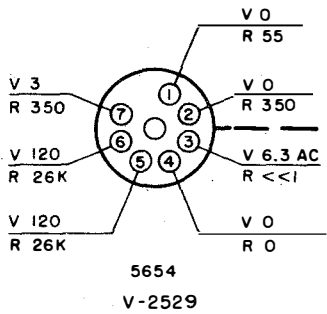
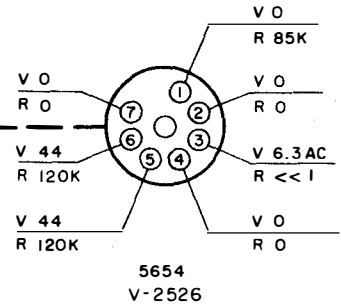
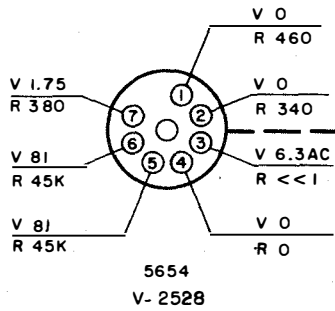
If there is no output from unit 10, use the trouble location diagram, figure 7-120, the schematic diagram, figure 7-141, the wiring diagram, figure 7-142, and the voltage and resistance chart, figure 7-40, to locate the fault.

w. FREQUENCY MULTIPLIER, UNIT 10 (Z-2526) REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—All the adjustments on unit 10 are *factory adjustments* and should *not* be tampered with unless it is absolutely

NOTES

1. ALL MEASUREMENTS TO GROUND UNLESS OTHERWISE INDICATED.
2. READINGS TAKEN WITH MULTIMETER ME-25A/U, VOLTAGE READINGS D-C UNLESS OTHERWISE INDICATED. USE THAT SCALE WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE, A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON A ONE VOLT SCALE; A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON A 250 VOLT SCALE.
3. TEST KEY (T) IN CENTER POSITION.
4. TRANSMITTER IN STANDBY.
5. RFO FREQUENCY SET AT 2 MC. BAND SWITCH (FF) AT .3-6 MC POSITION.



SECTION A-A

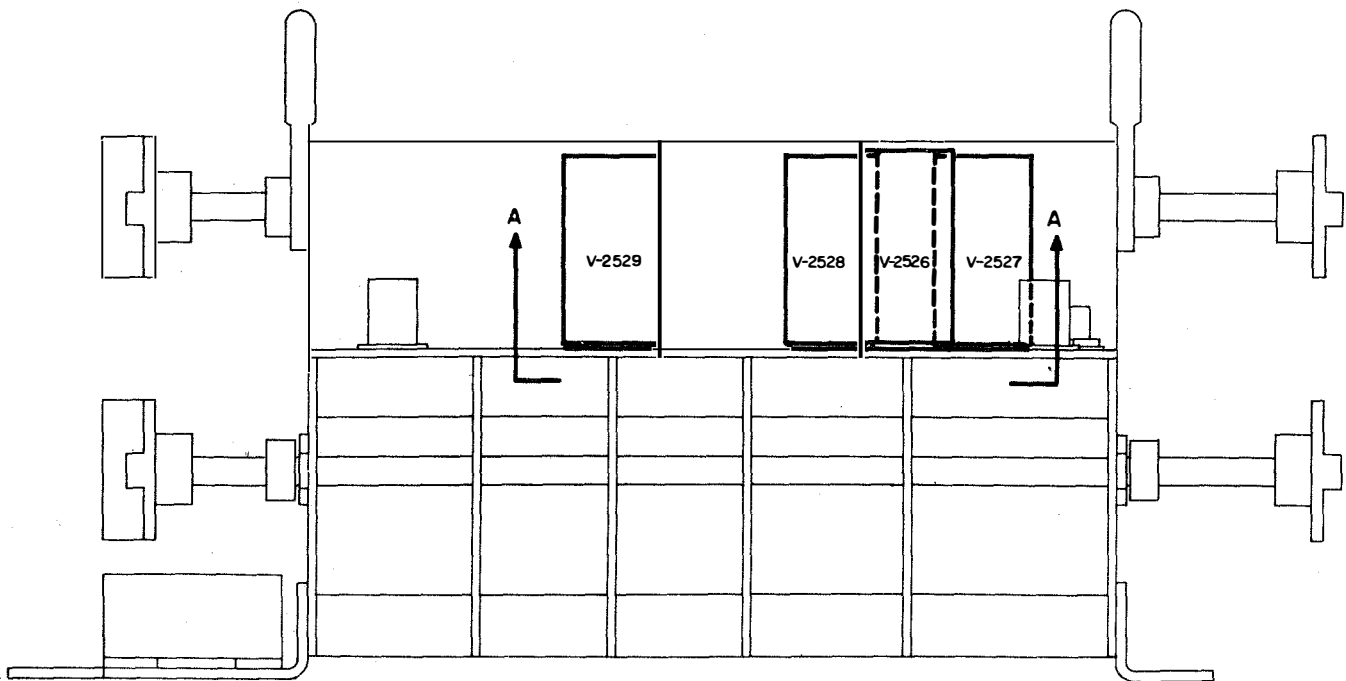


Figure 7-40. RFO, Unit 10 (Z-2526), Voltage and Resistance Chart

necessary. Unit 10 must be placed on subunit extension test cables and switch Ⓢ must be in STANDBY in order to make these adjustments.

Note

Use the special insulated screwdriver supplied with the RFO for all the adjustments on unit 10. Do not make these adjustments unless units 1 and 2 are properly aligned.

Step 1. Place unit 10 on the subunit extension test cable and connect a cable to jack 2e and jack 10 on unit 10. Refer to section 1 for extension test cable fabrication instructions.

Step 2. Connect Multimeter ME-25A/U (or equivalent), using the r-f probe, to jack 10 on unit 10 (use 2.5-volt scale).

Step 3. Using table 7-23, set switch S-2526 pointer as indicated and adjust coils for maximum output as indicated on Multimeter ME-25A/U.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—To remove unit 10, set knob Ⓢ at position 0, and check that red dot on unit 10 coupler is facing outward. Remove the two cables connected to unit 10, and loosen the cowl fasteners.

CAUTION

Pull handles slowly and straight out to remove unit 10 from mounting, being careful not to bend the pins on connecting plug.

To reach tube sockets, remove bottom plate of unit 10. Remove remaining two plates to provide access to the switches. Figures 7-41 and 7-42 show the location of all components on unit 10.

(b) REPLACEMENT AND ADJUSTMENTS.

—To replace unit 10 set knob Ⓢ at 0 position. Set red pointer on unit 10 shaft to position 0. Line up guide holes and couplers on unit 10 with guide pins and couplers on unit 14 mounting. Push unit 10 in slowly until it is properly seated, and tighten cowl fasteners. Connect the two cables to the proper jacks on unit 10.

CAUTION

Do not force unit 10 into position. Forcing may damage the couplers or the pins on the connecting plug.

Note

When replacing unit 10 with a new unit 10, it may be necessary to loosen the power plug mounting screws and the chassis guide bushing nuts to effect proper alignment on unit 14 mounting. After proper alignment be sure to tighten the power plug screws and guide bushing nuts.

**TABLE 7-23. UNIT 10, 1-MC STEP
FILTER ADJUSTMENTS**

| FREQUENCY (MC) | POSITION OF S-2526 POINTER | ADJUSTMENT | ADJUSTMENT LABEL |
|----------------|----------------------------|------------|------------------|
| 7 | 0 | L-2526 | F0 |
| | | L-2537 | E0 |
| | | L-2548 | D0 |
| | | L-2559 | C0 |
| | | L-2570 | B0 |
| 8 | 1 | L-2527 | F1 |
| | | L-2538 | E1 |
| | | L-2549 | D1 |
| | | L-2560 | C1 |
| | | L-2571 | B1 |
| 13 | 2 | L-2528 | F2 |
| | | L-2539 | E2 |
| | | L-2550 | D2 |
| | | L-2561 | C2 |
| | | L-2572 | B2 |
| 14 | 3 | L-2529 | F3 |
| | | L-2540 | E3 |
| | | L-2551 | D3 |
| | | L-2562 | C3 |
| | | L-2573 | B3 |
| 16 | 4 | L-2530 | F4 |
| | | L-2541 | E4 |
| | | L-2552 | D4 |
| | | L-2563 | C4 |
| | | L-2574 | B4 |
| 17 | 5 | L-2531 | F5 |
| | | L-2542 | E5 |
| | | L-2553 | D5 |
| | | L-2564 | C5 |
| | | L-2575 | B5 |
| 18 | 6 | L-2532 | F6 |
| | | L-2543 | E6 |
| | | L-2554 | D6 |
| | | L-2565 | C6 |
| | | L-2576 | B6 |
| 19 | 7 | L-2533 | F7 |
| | | L-2544 | E7 |
| | | L-2555 | D7 |
| | | L-2566 | C7 |
| | | L-2577 | B7 |
| 20 | 8 | L-2534 | F8 |
| | | L-2545 | E8 |
| | | L-2556 | D8 |
| | | L-2567 | C8 |
| | | L-2578 | B8 |
| 21 | 9 | L-2535 | F9 |
| | | L-2546 | E9 |
| | | L-2557 | D9 |
| | | L-2568 | C9 |
| | | L-2579 | B9 |
| 22 | 10 | L-2536 | F10 |
| | | L-2547 | E10 |
| | | L-2558 | D10 |
| | | L-2569 | C10 |
| | | L-2580 | B10 |

NOTE: The position of front panel frequency selection knobs does not matter.

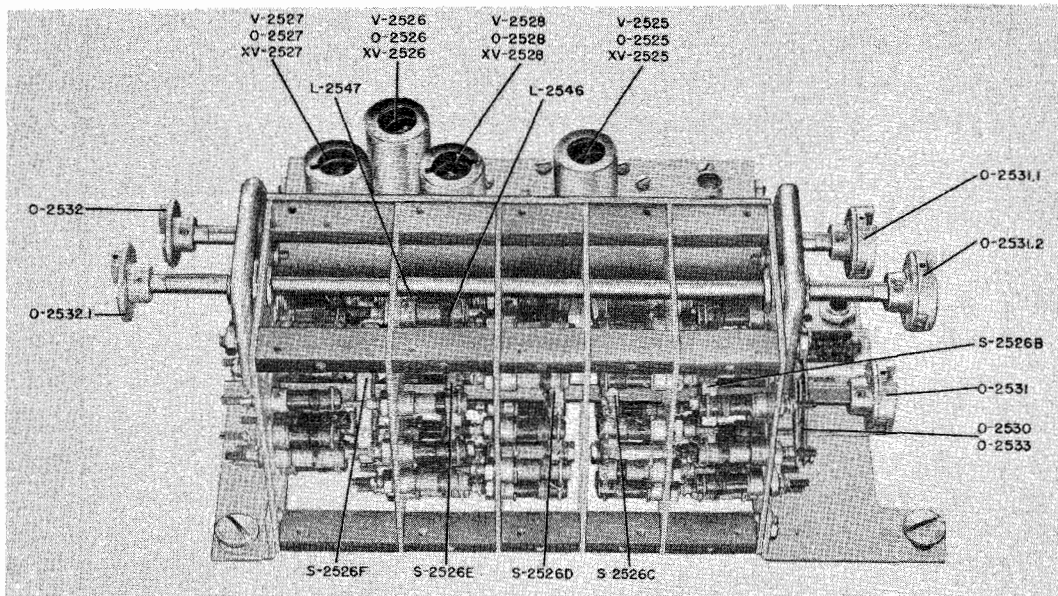


Figure 7-41. RFO, Unit 10 (Z-2526), Covers Removed, Bottom Oblique View

x. ELECTRONIC FREQUENCY CONVERTER, UNIT 11A (Z-2626), TROUBLE SHOOTING.—The electronic frequency converter (unit 11A) has two inputs and one output. Input signal 9a can be checked at test point 9a, and signal 10a at test point 10a. Output signal 11a can be checked at test point 11a. Table 7-24 indicates nominal r-f voltage to be measured at the test points. Use Multimeter ME-25A/U with r-f probe.

If there is no output, use the trouble location diagram, figure 7-120, the schematic diagram, figure 7-143, the wiring diagram, figure 7-144, and the voltage and resistance chart, figure 7-43, to locate the fault.

y. ELECTRONIC FREQUENCY CONVERTER, UNIT 11A (Z-2626), REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—The two adjustable components on unit 11A are L-2629 and L-2630 (figure 7-44).

Note

These are *factory adjustments* and should *not* be tampered with unless an inductor is replaced or its adjustment has become loose.

Alignment of unit 11A will be indicated if there is a substantial reduction of r-f output or no output at the test points when the frequency setting as indicated by the RFO frequency selection knobs is between 0.3 mc and 6.0 mc.

Since unit 11A is located on the bottom of the RFO mounting (unit 14), L-2629 and L-2630 may be adjusted without removing unit 11A from the mounting (see figure 7-9).

TABLE 7-24. UNIT 11A R-F VOLTAGE AT TEST POINTS

| TEST POINT | NOMINAL VOLTAGE |
|------------|-----------------|
| 9a | 1.5 |
| 10a | 0.3 |
| 11a | 3.0 |

Note

Do not make these adjustments until all units except 11B and 11C are properly aligned.

Step 1. Place equipment in stand-by condition, switch $\text{\textcircled{P}}$ in STANDBY, and TEST KEY $\text{\textcircled{T}}$ in locked up position.

Step 2. Set up a frequency of 6 mc on frequency selection knobs on the RFO front panel.

Step 3. Connect Multimeter ME-25A/U (or equivalent) with r-f probe to test point 11a and use 2.5-volt scale.

Step 4. Adjust L-2629 and L-2630 for maximum meter reading and apply glyptal to them.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—To remove unit 11A, disconnect three cables from chassis, loosen cowl fasteners, and use handle to remove unit 11A from mounting. Figures 7-44 and 7-45 show the location of components of unit 11A.

CAUTION

Pull handle slowly and straight out so as not to bend pins on connecting plug.

(b) REPLACEMENT AND ADJUSTMENTS.—To replace unit 11A, line up the two chassis guide holes on unit 11A with the two guide pins on unit 14 mounting. Push unit 11A in slowly until it is properly seated, and tighten the two cowl fasteners. Connect the three cables to the proper jacks on unit 11A.

CAUTION

Do not force unit 11A into position. Forcing may damage the pins on connecting plug.

No adjustments are required on unit 11A unless L-2629 or L-2630 is replaced. When replacing an inductor, adjust its slug (see paragraph 5y(1)).

Note

When replacing unit 11A with a new unit 11A, it may be necessary to loosen the power plug mounting screws and the chassis guide bushing nuts to effect proper alignment on unit 14 mounting. After proper alignment, be sure to tighten the power plug screws and guide bushing nuts.

z. ELECTRONIC FREQUENCY CONVERTER, UNIT 11B (Z-2651), TROUBLE SHOOTING.—The electronic frequency converter (unit 11B) has two inputs and one output. Nominal r-f voltages may be checked by means of Multimeter ME-25A/U at the test points of unit 11B as indicated in table 7-25.

TABLE 7-25. UNIT 11B, R-F VOLTAGE AT TEST POINTS

| TEST POINT | NOMINAL VOLTAGE |
|------------|-----------------|
| 9b | 1.0 |
| 10b | 0.4 |
| 11b | 2.4 |

NOTE: Above voltages can be measured only when BAND knob (F) is in position 6-16 MC.

If there is no output, use the trouble location diagram, figure 7-120, the schematic diagram, figure 7-145, the wiring diagram, figure 7-146, and the voltage and resistance chart, figure 7-46, to locate the fault.

aa. ELECTRONIC FREQUENCY CONVERTER, UNIT 11B (Z-2651), REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—All adjustments on unit 11B are *factory adjustments* and should *not* be tampered with unless absolutely necessary. Connect unit 11B to a subunit extension test cable to make these adjustments. Refer to Section 1 for extension test cable fabrication instructions.

Note

Do not make these adjustments until all RFO units except 11A and 11G are properly aligned.

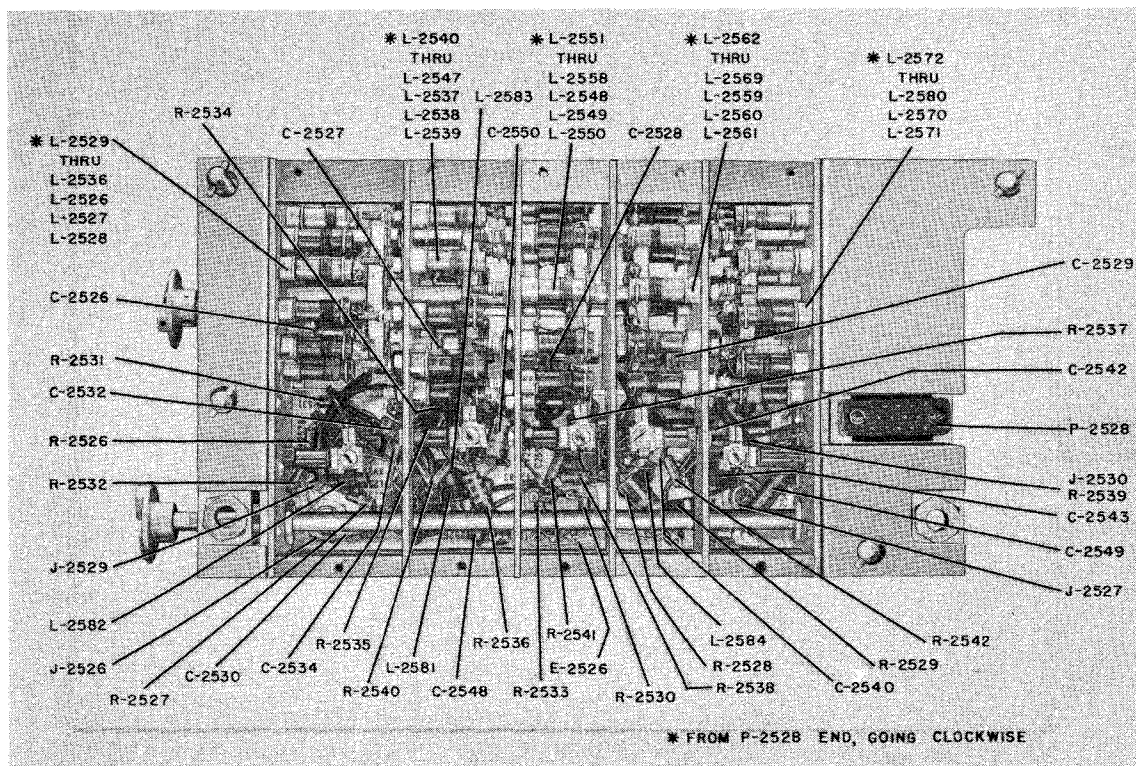
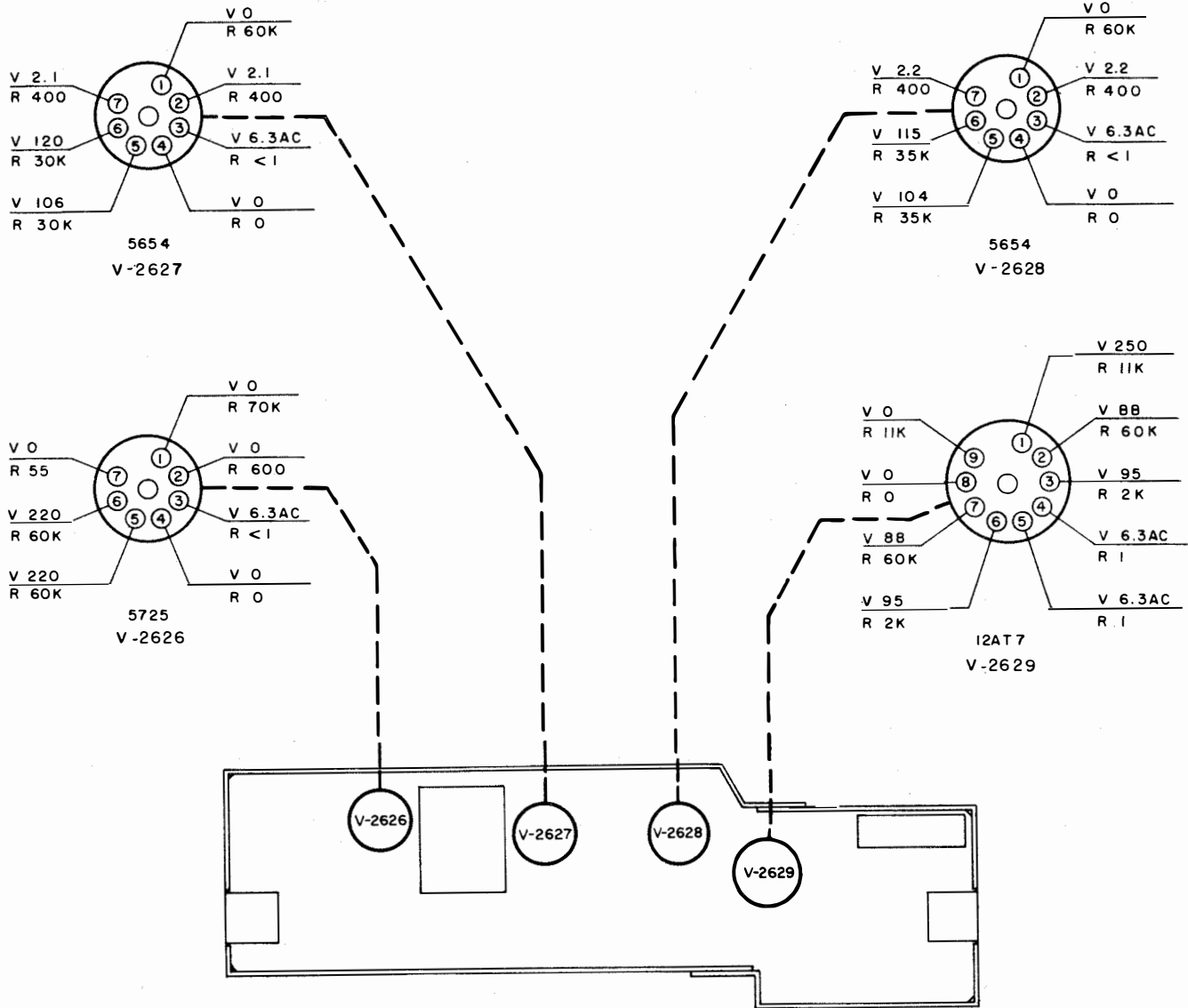


Figure 7-42. RFO, Unit 10 (Z-2526), Covers Removed, Right View



NOTES

1. ALL MEASUREMENTS TO GROUND UNLESS OTHERWISE INDICATED.
2. READINGS TAKEN WITH MULTIMETER ME-25A/U, VOLTAGE READINGS D-C UNLESS OTHERWISE INDICATED. USE THAT SCALE WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE, A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON A ONE VOLT SCALE; A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON A 250 VOLT SCALE.
3. TEST KEY (T) IN UP POSITION.
4. TRANSMITTER IN STANDBY.
5. RFO FREQUENCY SET AT 2 MC. BAND SWITCH (FF) AT .3-6 MC POSITION.

Figure 7-43. RFO, Unit 11A (Z-2626), Voltage and Resistance Chart

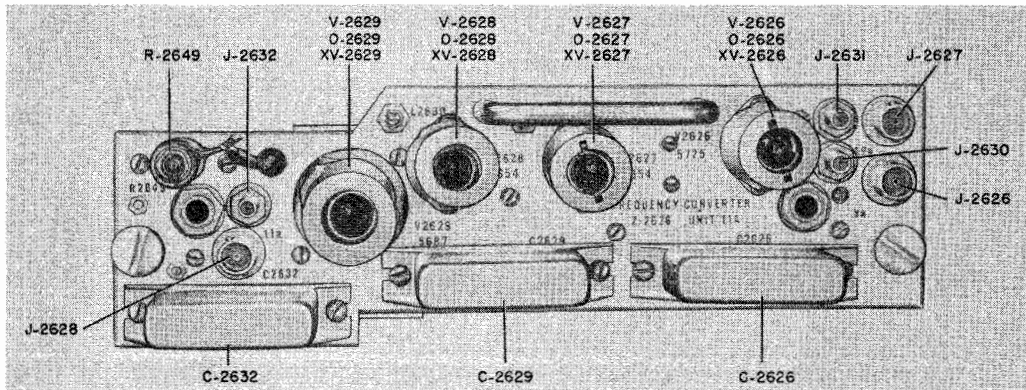


Figure 7-44. RFO, Unit 11A (Z-2626), Top View

Alignment of unit 11B will be indicated if there is a substantial reduction (see figure 7-120) of r-f output or no output at test point 11b, after it has been established that the mixer and amplifier stages (V-2651 through V-2654) are known to be operating properly. RFO front panel knob BAND (F) must be in position 6-16 MC for this check.

Note

Adjustments on S-2651 and S-2652 are located as follows: C, C0 through C9 and D, D0 through D9 at the front of S-2651; B0 through B8 and C0 through C8 at the front of S-2652; E, E0 through E9 and F, F0 through F9 at the rear of S-2651; D0 through D8 and E0 through E8 at the rear of S-2652.

Step 1. Set RFO front panel frequency selection knobs for a frequency of 15.94500 mc. This sets switch S-2651 on unit 11B at position 5 and switch S-2652 at 9.

Step 2. Place unit 11B on a subunit extension cable. Connect jacks 9b and 10b on unit 11B to corresponding cables of unit 14 mounting.

Step 3. Switches (P) in STANDBY and TEST KEY (T) in locked up position. Set the slugs of capacitors C-2660, C-2687, C-2710 and C-2737 (labeled C, D, E, and F, respectively, on S-2651) at their midpositions. Use the special insulated screwdriver and determine the midposition of the slugs by rotating slugs first clockwise then counterclockwise, counting the number of turns and setting slug at the midpoint.

WARNING

Use the special insulated screwdriver supplied with the RFO to make adjustments labeled C, C0 through C9, D, D0 through D9, and E, E0 through E9 on S-2651 and B0 through B8, C0 through C8, and D0 through D8 on S-2652.

Step 4. Connect Multimeter ME-25A/U to test point 11b and place meter on the 5.0-volt scale using r-f probe.

Step 5. Adjust the slugs of L-2656, L-2666, L-2680 and L-2690 (labeled C5, D5, E5 and F5, respectively, on S-2651) for a maximum reading on the meter.

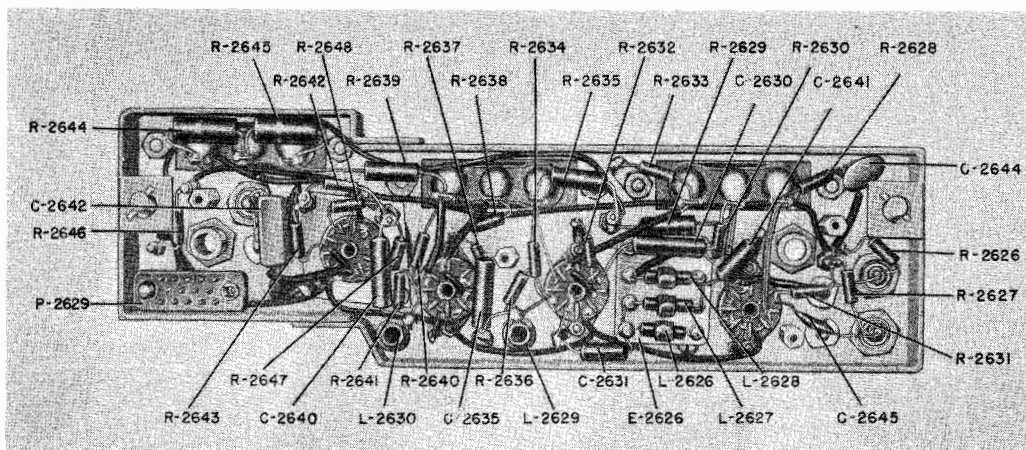


Figure 7-45. RFO, Unit 11A (Z-2626), Cover Removed, Bottom View

**TABLE 7-26. UNIT 11B, 100-KC STEP
FILTER ADJUSTMENTS**

| Position of Red Pointer on S-2652 | FREQUENCY in MC. | ADJUSTMENT | ADJUSTMENT LABEL |
|-----------------------------------|------------------|---------------|------------------|
| 9 | 15.945 | No adjustment | |
| 8 | 15.845 | C-2676 | B8 |
| | | C-2753 | C8 |
| | | C-2726 | D8 |
| | | C-2752 | E8 |
| 7 | 15.745 | C-2675 | B7 |
| | | C-2727 | C7 |
| | | C-2725 | D7 |
| | | C-2751 | E7 |
| 6 | 15.645 | C-2674 | B6 |
| | | C-2677 | C6 |
| | | C-2724 | D6 |
| | | C-2750 | E6 |
| 5 | 15.545 | C-2672 | B5 |
| | | C-2699 | C5 |
| | | C-2722 | D5 |
| | | C-2748 | E5 |
| 4 | 15.445 | C-2670 | B4 |
| | | C-2697 | C4 |
| | | C-2720 | D4 |
| | | C-2746 | E4 |
| 3 | 15.345 | C-2668 | B3 |
| | | C-2695 | C3 |
| | | C-2718 | D3 |
| | | C-2744 | E3 |
| 2 | 15.245 | C-2666 | B2 |
| | | C-2693 | C2 |
| | | C-2716 | D2 |
| | | C-2742 | E2 |
| 1 | 15.145 | C-2664 | B1 |
| | | C-2691 | C1 |
| | | C-2714 | D1 |
| | | C-2740 | E1 |
| 0 | 15.045 | C-2662 | B0 |
| | | C-2689 | C0 |
| | | C-2712 | D0 |
| | | C-2738 | E0 |

After adjustments have been made as indicated in table 7-26, return (red pointer) indicator on S-2652 to position 4. Set S-2551 on unit 11B and knobs Ⓐ and Ⓑ to the positions shown in table 7-27.

Adjust corresponding inductors for a maximum reading on multimeter. Frequency selection knobs on RFO front panel should be set to the corresponding settings as indicated in table 7-27.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—Unit 11B should be removed from the mounting as follows:

Step 1. Set knobs Ⓓ and Ⓔ at position 0.

Step 2. Check that red dots on couplers are facing outward from the mounting.

Step 3. Remove the three cables connected to unit 11B.

Step 4. Loosen cowl fasteners, and use handles to remove unit 11B from the mounting.

CAUTION

Pull handles slowly and straight out so as not to damage the pins on connecting plug and the unit 11B couplers. Do not apply chemicals to trimmer capacitors on S-2652.

WARNING

Before removing unit 11B or 11C, remove all power from transmitter group including 110 volts ac supplied to the oven heaters.

To reach tube sockets, remove the cover plate between the jacks and the tubes by removing six machine screws. The remaining three plates may be removed to reach the switch components. Figures 7-47 and 7-48 show the location of all components on unit 11B.

(b) REPLACEMENT AND ADJUSTMENTS.

—To replace unit 11B, place knobs Ⓓ and Ⓔ at position 0. Set shaft indicators (red pointers) on unit 11B to position 0. Line up guide holes and couplers on unit 11B with guide pins and couplers on unit 14 mounting. Push unit 11B in slowly, making sure that couplers are mating properly, with red dots coinciding. Tighten cowl fasteners and connect cables to proper jacks.

CAUTION

Do not force unit 11B into position. Forcing may damage pins on connecting plug and couplers.

Note

When replacing unit 11B with a new unit 11B, it may be necessary to loosen the power plug mounting screws and the chassis guide bushing nuts to effect proper alignment on unit 14 mounting. After proper alignment, be sure to tighten the power plug screws and guide bushing nuts.

No electrical adjustments are required on unit 11B unless one of the filter components is replaced. When replacing a component, adjust its slug. (See paragraph 5aa (1).)

bb. ELECTRONIC FREQUENCY CONVERTER, UNIT 11C (Z-2801) TROUBLE SHOOTING.—The electronic frequency converter (unit 11C) has two inputs and one output. Nominal r-f voltages may be checked by means of Multimeter ME-25A/U at the test points on unit 11C as indicated in table 7-28.

If there is no output, use the trouble location diagram, figure 7-120, the schematic diagram, figure 7-147, wiring diagram, figure 7-148, and the voltage and resistance chart, figure 7-49, to locate the fault.

TABLE 7-27. UNIT 11B, 1-MC STEP FILTER ADJUSTMENTS

| Position of Red Pointer | | KNOBS | | FREQUENCY IN MC. | ADJUSTMENT | ADJUSTMENT LABEL |
|-------------------------|--------|-------|---|------------------|--------------------------------------|----------------------|
| S-2651 | S-2652 | Ⓐ | Ⓑ | | | |
| 4 | 4 | 2 | 6 | 14.445 | L-2655 L-2665 L-2679 L-2689 | C4 D4 E4 F4 |
| 3 | 4 | 2 | 7 | 13.445 | L-2654 L-2664 L-2678 L-2688 | C3 D3 E3 F3 |
| 2 | 4 | 2 | 8 | 12.445 | L-2653 L-2663 L-2677 L-2687 | C2 D2 E2 F2 |
| 1 | 4 | 1 | 4 | 11.445 | L-2652 L-2662 L-2676 L-2686 | C1 D1 E1 F1 |
| 0 | 4 | 1 | 5 | 10.445 | L-2651 L-2661 L-2675 L-2685 | C0 D0 E0 F0 |
| 9 | 4 | 0 | 2 | 9.445 | L-2660 L-2670 L-2684 L-2694 | C9 D9 E9 F9 |
| 8 | 4 | 0 | 3 | 8.445 | L-2659 L-2669 L-2683 L-2693 | C8 D8 E8 F8 |
| 7 | 4 | 1 | 8 | 7.445 | L-2658 L-2668 L-2682 L-2692 | C7 D7 E7 F7 |
| 6 | 4 | 0 | 4 | 6.445 | L-2657 L-2667 L-2681 L-2691 | C6 D6 E6 F6 |

cc. ELECTRONIC FREQUENCY CONVERTER,
UNIT 11C (Z-2801), REPAIR AND
ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—All adjustable components on unit 11C are *factory adjusted* and should *not* be tampered with unless absolutely necessary. Connect unit 11C to an extension test cable to make these adjustments. Refer to Section 1 for extension test cable fabrication instructions.

TABLE 7-28. UNIT 11C, R-F VOLTAGE
AT TEST POINTS

| TEST POINT | NOMINAL VOLTAGE |
|------------|-----------------|
| 9c | 1.0 |
| 10c | 0.3 |
| 11c | 4.5 |

NOTE: Above voltages can be measured only when BAND knob Ⓕ is in position 16-26 MC.

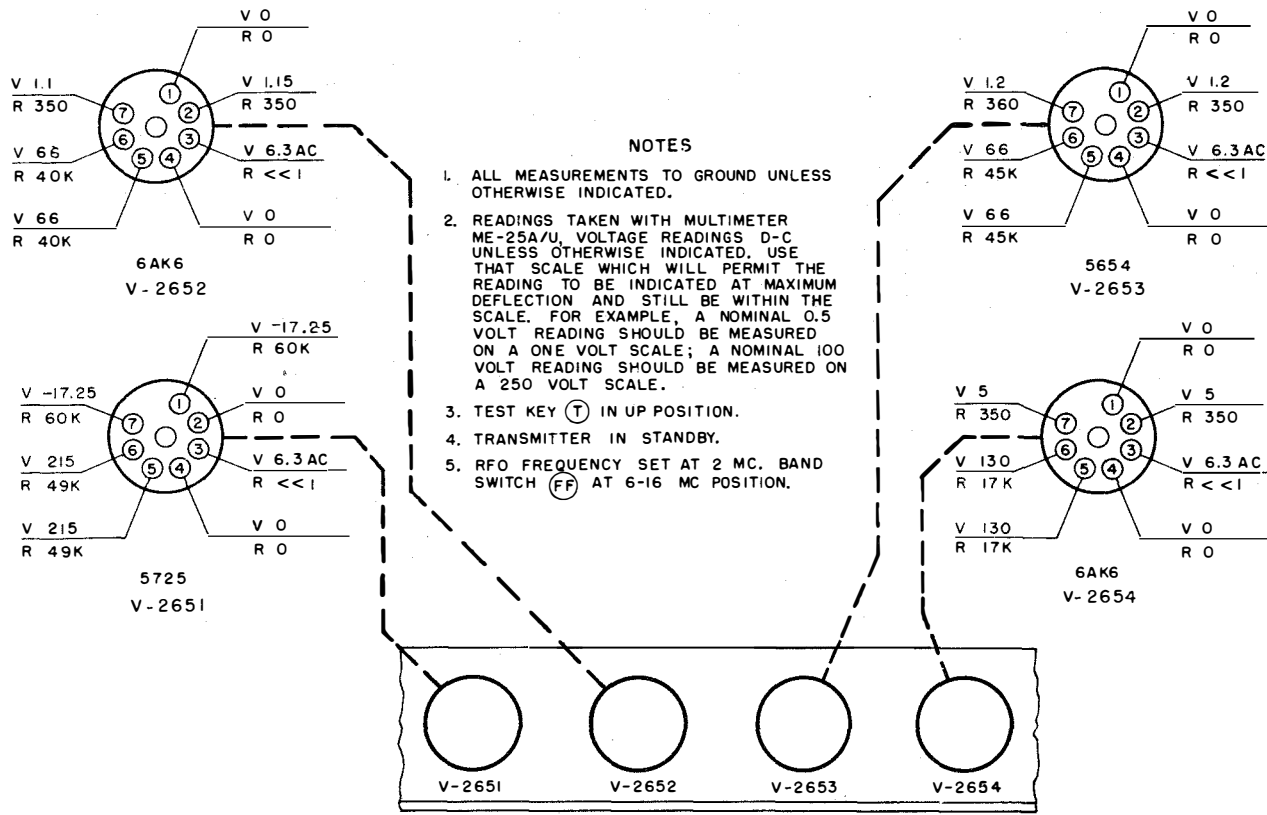
Note

Do not make these adjustments until all RFO units except 11A and 11B are properly aligned. Alignment of unit 11C will be indicated if there is a substantial reduction (see figure 7-120) of r-f output or no output at test point 11c, after it has been established that the mixer and amplifier stages (V-2801 through V-2804) are known to be operating properly. RFO front panel knob BAND Ⓕ must be in position 16-26 MC for this check.

Step 1. Set RFO front panel frequency selection knobs for a frequency of 25.94500 mc. This sets switch S-2801 on unit 11C at position 5 and switch S-2802 at 9.

Step 2. Remove unit 11C from mounting and use the subunit extension cable. Connect jacks 9c and 10c on unit 11C to corresponding cables of unit 14 mounting.

Step 3. Connect Multimeter ME-25A/U to jack



SECTION A-A

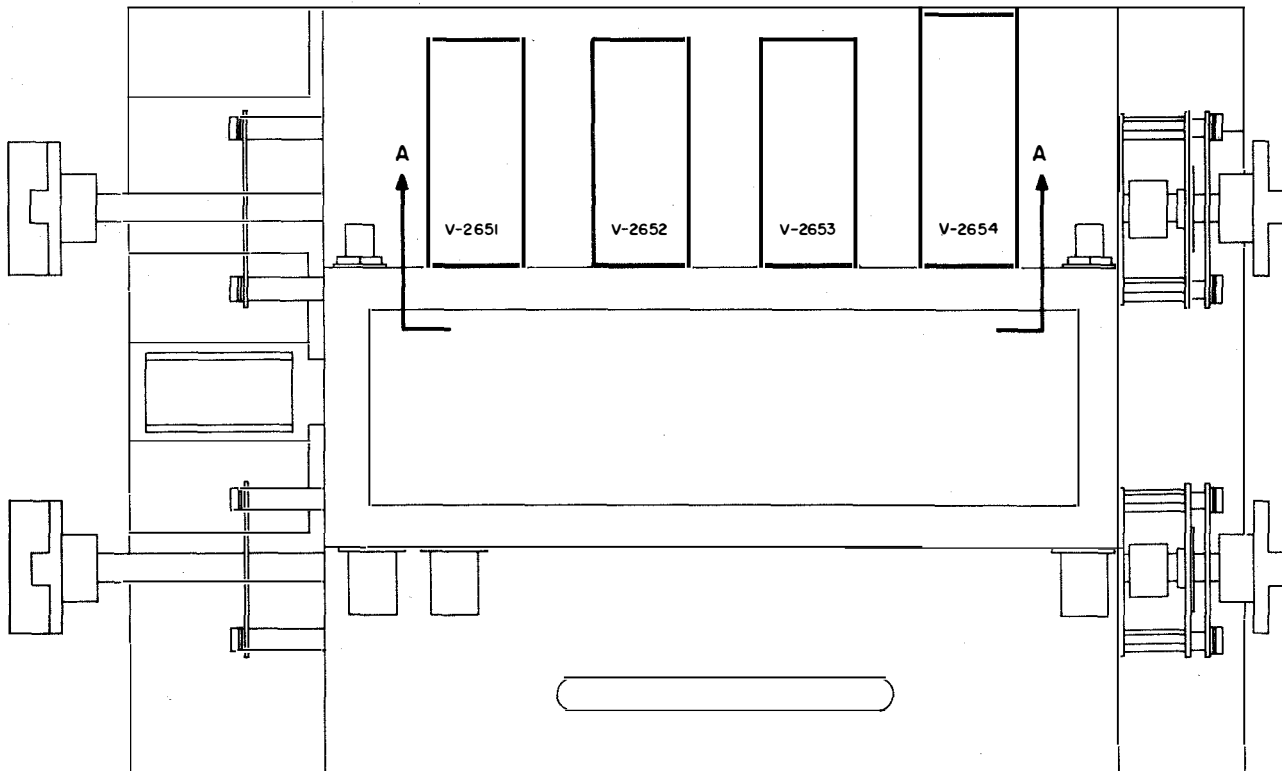


Figure 7-46. RFO, Unit 11B (Z-2651), Voltage and Resistance Chart

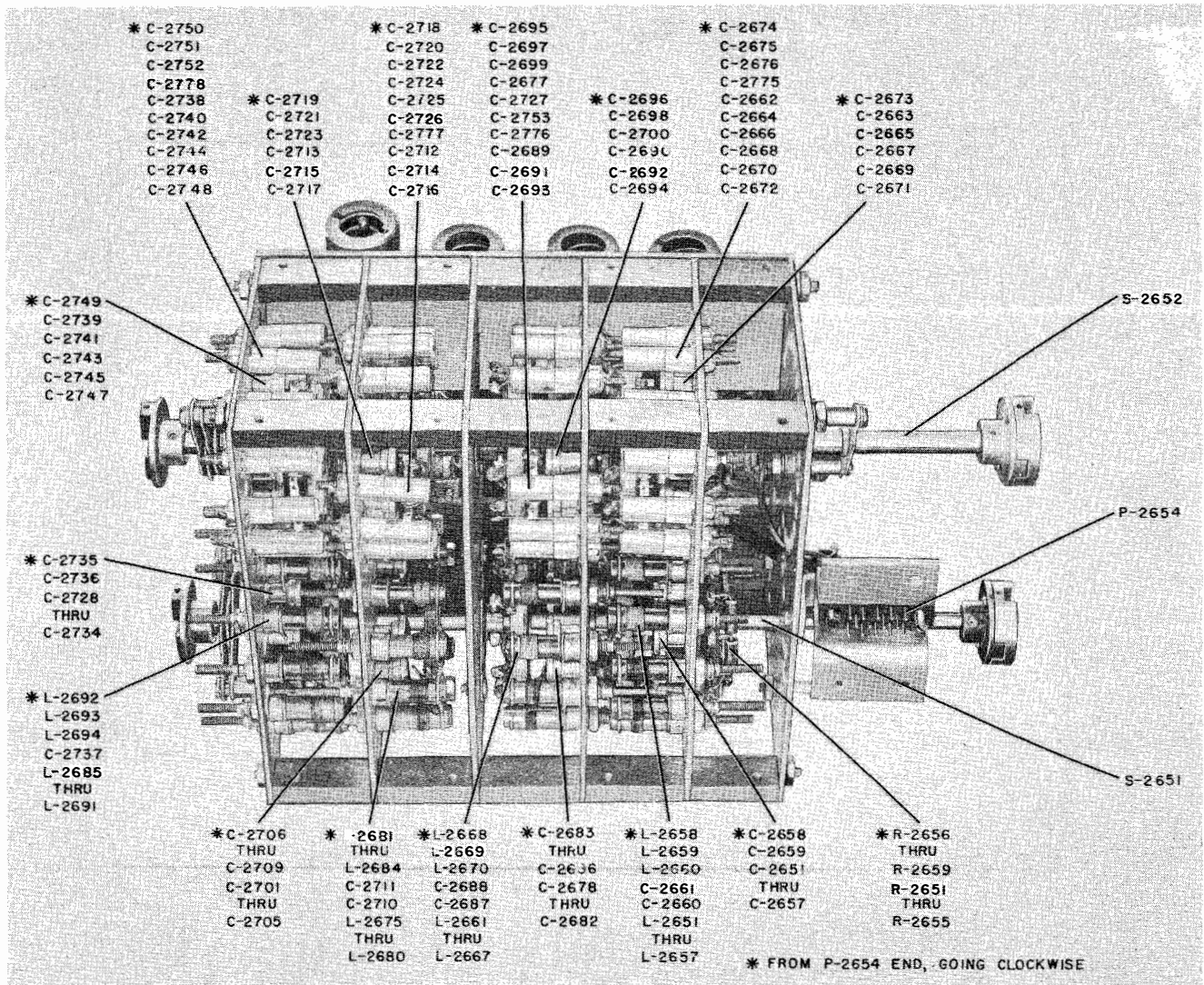


Figure 7-47. RFO, Unit 11B (Z-2651), Covers Removed, Top Oblique View

11e on unit 11c and set meter on 5-volt scale, using the r-f probe.

Step 4. Switch \textcircled{P} in STANDBY, and TEST KEY \textcircled{T} in locked up position. Set the slugs of capacitors C-2810, C-2845, C-2865, and C-2887 (labeled B, C, D and E, respectively, on S-2801) at their midpositions. Use the special insulated screwdriver and determine the midposition of the slugs by rotating first clockwise and then counterclockwise, counting the number of turns and setting the slugs at their midposition.

Note

Adjustments on S-2801 and S-2802 are located as follows: B, B0 through B9, C, C0 through C9, B7T and C7T at the front of S-2801; A0 through A8 and B0 through B8 at the front of S-2802; D, D0 through D9 and E,

E0 through E9 at the rear of S-2801; C0 through C8 and D0 through D8 at the rear of S-2802.

WARNING

Use the special insulated screwdriver supplied with the RFO to make adjustments labeled B, B0 through B9, C, C0 through C9, B7T, C7T, and D, D0 through D9 on S-2801 and A0 through A8, B0 through B8, and C0 through C8 on S-2802.

Step 5. Set knob \textcircled{A} at 2 and \textcircled{B} at 0.

Step 6. Adjust the slugs of L-2806, L-2816, L-2826 and L-2836 (labeled B5, C5, D5 and E5, respectively, on S-2801) for a maximum reading on the meter.

Step 7. Rotate the indicator (red pointer) of switch S-2802 to the positions listed in table 7-29 and

7 Section

Paragraph 5 cc (1)

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adjust the four corresponding capacitors on S-2802 for a maximum meter reading.

After adjustments have been made as indicated in table 7-29, return indicator on S-2802 to position 4. Set S-2801 on unit 11C and knobs (AA) and (BB) to the positions shown in table 7-30.

Adjust corresponding inductors for a maximum reading on multimeter. Frequency selection knobs on RFO front panel should be set as indicated in table 7-30.

**TABLE 7-29. UNIT 11C, 100-KC STEP
FILTER ADJUSTMENTS (Cont'd)**

**TABLE 7-29. UNIT 11C, 100-KC STEP
FILTER ADJUSTMENTS**

| Position of Red Pointer | | FREQUENCY IN MC. | ADJUSTMENT | ADJUSTMENT LABEL |
|-------------------------|--------|------------------|------------|------------------|
| S-2801 | S-2802 | | | |
| 5 | 8 | 25.845 | C-2819 | A8 |
| | | | C-2839 | B8 |
| | | | C-2859 | C8 |
| | | | C-2878 | D8 |
| 5 | 7 | 25.745 | C-2818 | A7 |
| | | | C-2838 | B7 |
| | | | C-2858 | C7 |
| | | | C-2877 | D7 |
| 5 | 6 | 25.645 | C-2817 | A6 |
| | | | C-2837 | B6 |
| | | | C-2857 | C6 |
| | | | C-2876 | D6 |

| Position of Red Pointer | | FREQUENCY IN MC. | ADJUSTMENT | ADJUSTMENT LABEL |
|-------------------------|--------|------------------|------------|------------------|
| S-2801 | S-2802 | | | |
| 5 | 5 | 25.545 | C-2816 | A5 |
| | | | C-2836 | B5 |
| | | | C-2856 | C5 |
| | | | C-2875 | D5 |
| 5 | 4 | 25.445 | C-2815 | A4 |
| | | | C-2835 | B4 |
| | | | C-2855 | C4 |
| | | | C-2874 | D4 |
| 5 | 3 | 25.345 | C-2814 | A3 |
| | | | C-2834 | B3 |
| | | | C-2854 | C3 |
| | | | C-2873 | D3 |
| 5 | 2 | 25.245 | C-2813 | A2 |
| | | | C-2833 | B2 |
| | | | C-2853 | C2 |
| | | | C-2872 | D2 |
| 5 | 1 | 25.145 | C-2812 | A1 |
| | | | C-2832 | B1 |
| | | | C-2852 | C1 |
| | | | C-2871 | D1 |
| 5 | 0 | 25.045 | C-2811 | A0 |
| | | | C-2831 | B0 |
| | | | C-2851 | C0 |
| | | | C-2870 | D0 |

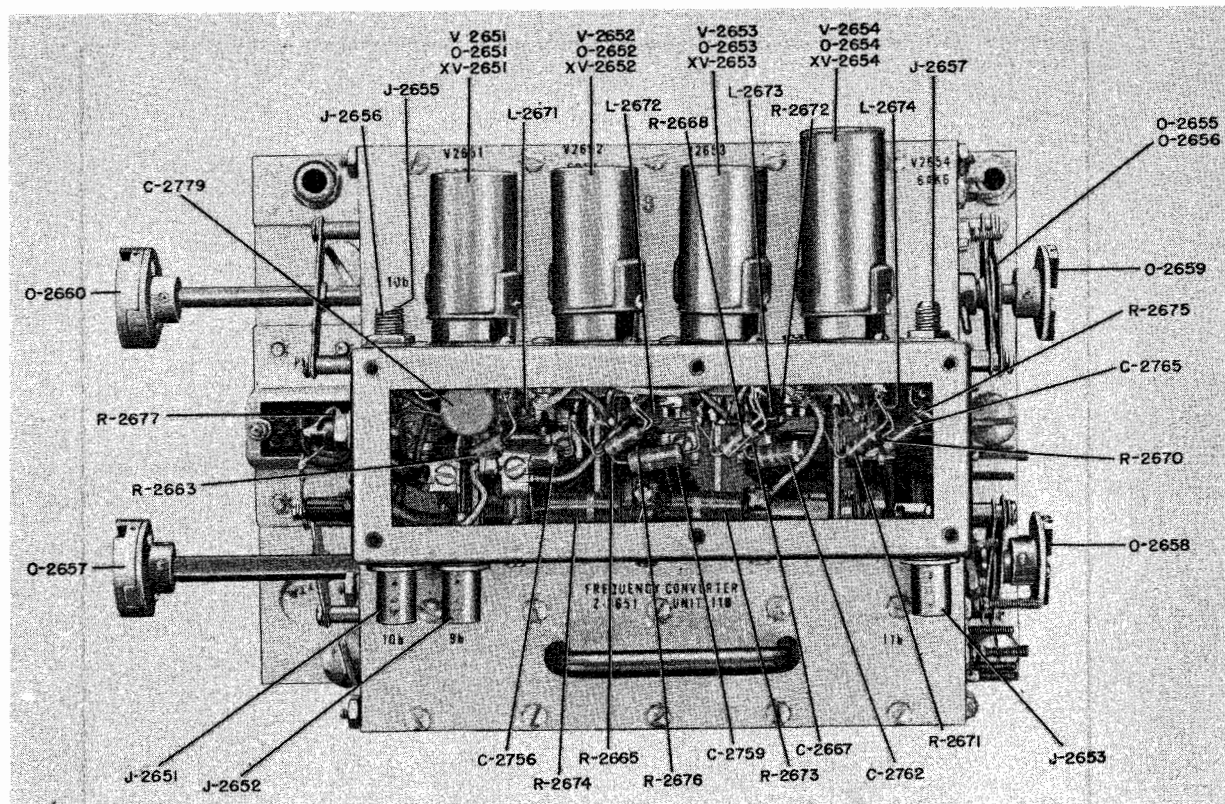


Figure 7-48. RFO, Unit 11B (Z-2651), Covers Removed, Right View

TABLE 7-30. UNIT 11C, 1-MC STEP FILTER ADJUSTMENTS

| Position of Red Pointer | | KNOBS | | FREQUENCY IN MC. | ADJUSTMENT | ADJUSTMENT LABEL |
|-------------------------|--------|-------|---|------------------|--------------------------------------|----------------------|
| S-2801 | S-2802 | Ⓐ | Ⓑ | | | |
| 4 | 4 | 3 | 2 | 24.445 | L-2805 L-2815 L-2825 L-2835 | B4 C4 D4 E4 |
| 3 | 4 | 3 | 3 | 23.445 | L-2804 L-2814 L-2844 L-2834 | B3 C3 D3 E3 |
| 2 | 4 | 0 | 1 | 22.445 | L-2803 L-2813 L-2843 L-2833 | B2 C2 D2 E2 |
| 1 | 4 | 3 | 4 | 21.445 | L-2802 L-2812 L-2842 L-2832 | B1 C1 D1 E1 |
| 0 | 4 | 3 | 5 | 20.445 | L-2801 L-2811 L-2841 L-2831 | B0 C0 D0 E0 |
| 9 | 4 | 1 | 1 | 19.445 | L-2810 L-2820 L-2830 L-2840 | B9 C9 D9 E9 |
| 8 | 4 | 2 | 3 | 18.445 | L-2809 L-2819 L-2829 L-2839 | B8 C8 D8 E8 |
| 7 | 4 | 3 | 8 | 17.445 | L-2808 L-2818 L-2828 L-2838 | B7 C7 D7 E7 |
| 6 | 4 | 3 | 9 | 16.445 | L-2807 L-2817 L-2827 L-2837 | B6 C6 D6 E6 |

Step 8. Set knob Ⓐ at 3, Ⓑ at 5, Ⓒ at 16-26 and all others at 0.

Step 9. Place indicator on S-2801 at 7, and S-2802 at 0.

Step 10. Connect a calibrated receiver (RBA, RBB, RBC series; see paragraph 3b) tuned to 20 mc, in place of Multimeter ME-25A/U connected to output jack 11c on unit 11C.

Step 11. Adjust traps L-2845 and L-2846 (labeled B7T and C7T, respectively, on S-2801) for a minimum receiver output as indicated on the receiver OUTPUT meter.

Step 12. Disconnect the receiver from output jack 11c and connect the Multimeter ME-25A/U in its place.

Step 13. Set RFO frequency selection knobs to 17.44500 mc.

Step 14. Set S-2801 indicator on unit 11C at position 7 and S-2802 at 4.

Step 15. Adjust L-2808, L-2818, L-2828, and L-2838 (labeled B7, C7, D7 and E7, respectively, on S-2801) for a maximum reading on the meter.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—Unit 11C is removed from the mounting (unit 14) in the same manner as unit 11B (see paragraph 5aa(2)(a)).

(b) REPLACEMENT AND ADJUSTMENTS.—Unit 11C is replaced in the same manner as unit 11B (see paragraph 5aa(2)(b)).

Note

When replacing unit 11C with a new unit 11C, it may be necessary to loosen the power plug mounting screws and the chassis guide bushing nuts to effect proper alignment on unit 14 mounting. After proper alignment, be sure to tighten the power plug screws and guide bushing nuts.

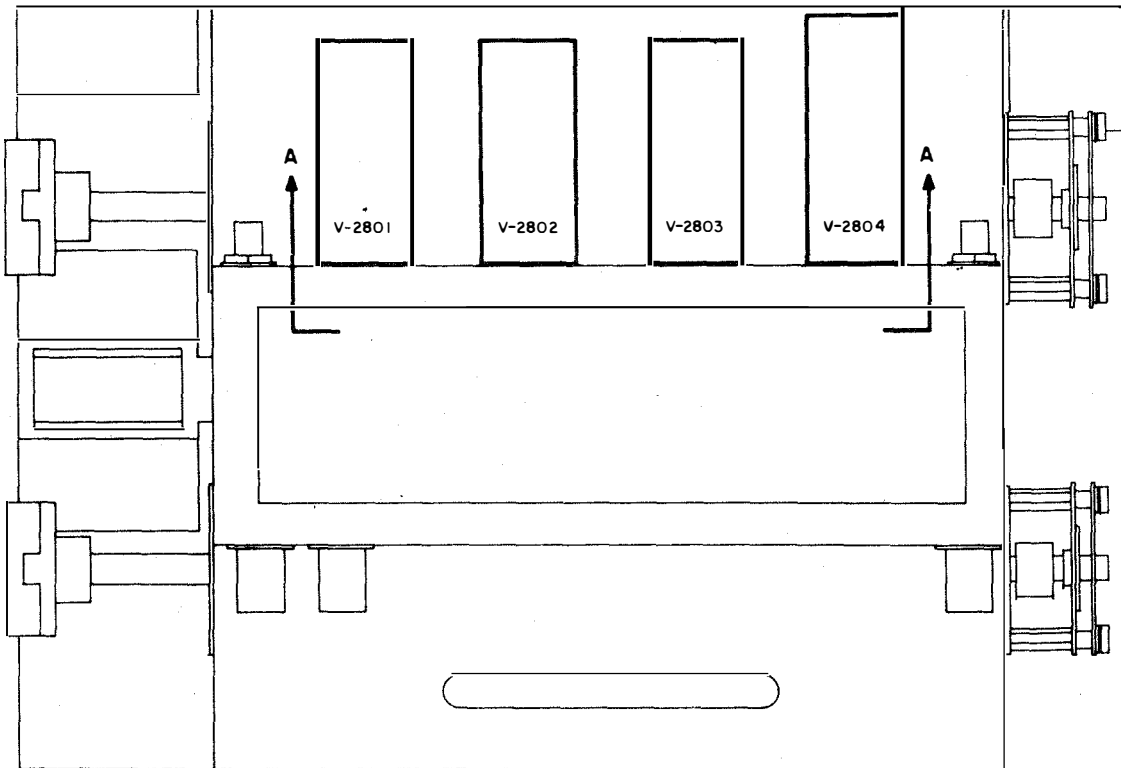
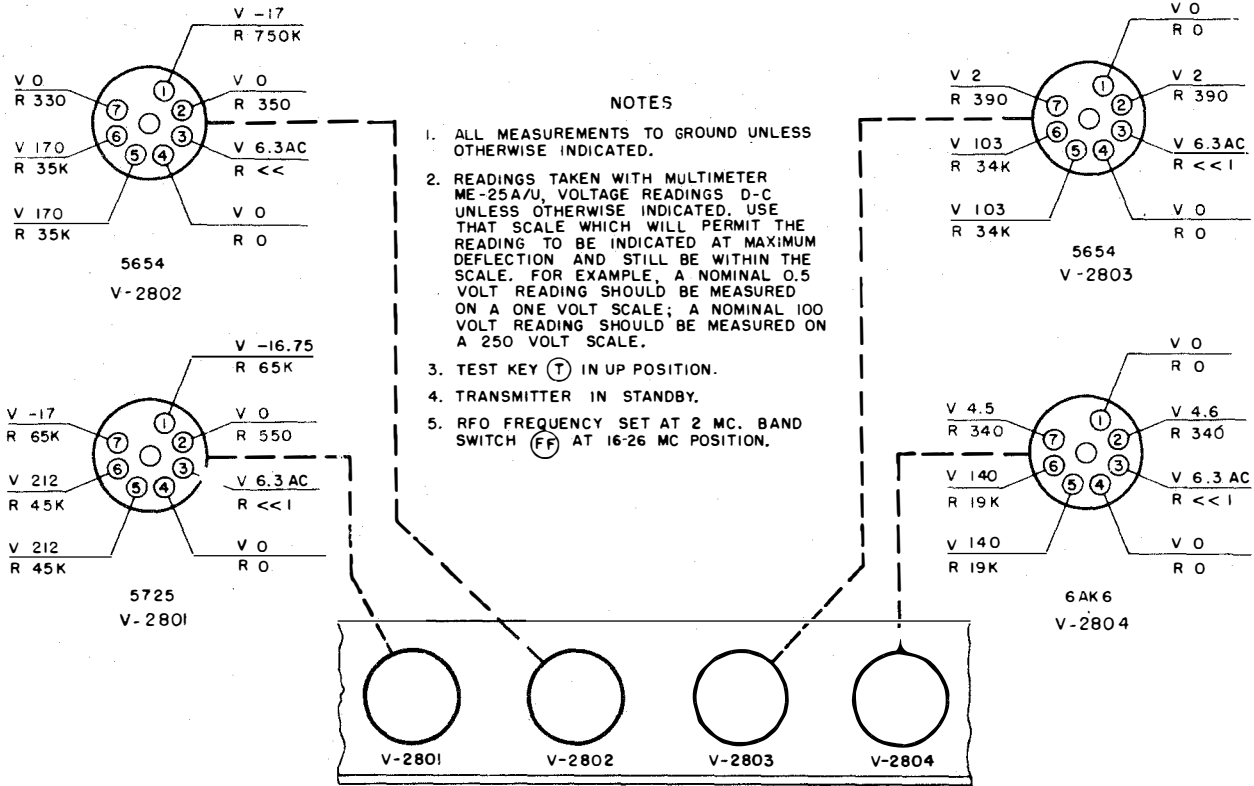


Figure 7-49. RFO, Unit 11C (Z-2801), Voltage and Resistance Chart

When replacing a filter component, adjust its slug as previously described in paragraph 5cc(1). Figures 7-50 and 7-51 show the location of all components in unit 11C.

dd. RADIO FREQUENCY OSCILLATOR, UNIT 12 (Z-2127), TROUBLE SHOOTING.—The radio frequency oscillator (unit 12), figures 7-52 and 7-53, has two outputs. One of these outputs can be checked at the arm of potentiometer R-2916 (figure 7-3) and the other output can be checked by means of the ZERO BEAT INDICATOR when switch (Z) on the RFO front panel is in position F.S. OSC. If there is no unit 12 output, check r-f voltage at jack F.S. OSC. or RFO front panel. Use Multimeter ME-25A/U, or equivalent, with r-f probe; the reading should be approximately 10.0 volts. Use the trouble location diagram, figure

7-120, for minimum r-f voltages, and refer to the schematic diagram, figure 7-149, the wiring diagram, figure 7-150, and the voltage and resistance chart, figure 7-54, to locate the fault.

ee. RADIO FREQUENCY OSCILLATOR, UNIT 12 (Z-2127), REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS—Four adjustments may be made when aligning unit 12. Two are located on unit 12 (Z-2126 and T-2126) (figure 7-52), and two are screwdriver adjustments on the RFO front panel (figure 7-3), F.S.O. ZERO ADJ. (R-2916) and F.S.O. RANGE ADJ. (R-2919).

Note

Oven Z-2126 must be cycling at least one hour before adjustments are made on unit 12.

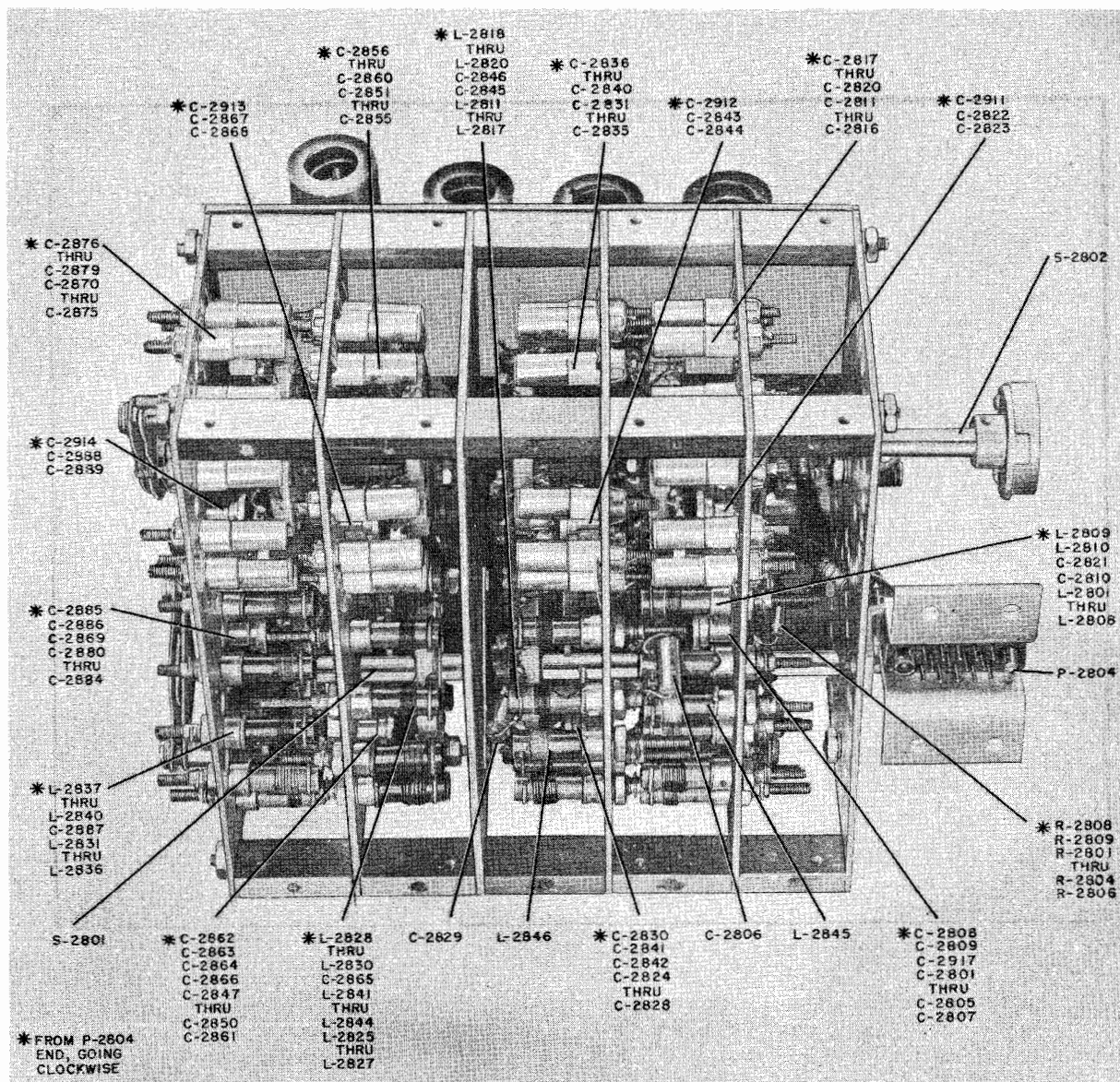


Figure 7-50. RFO, Unit 11C (Z-2801), Covers Removed, Left View

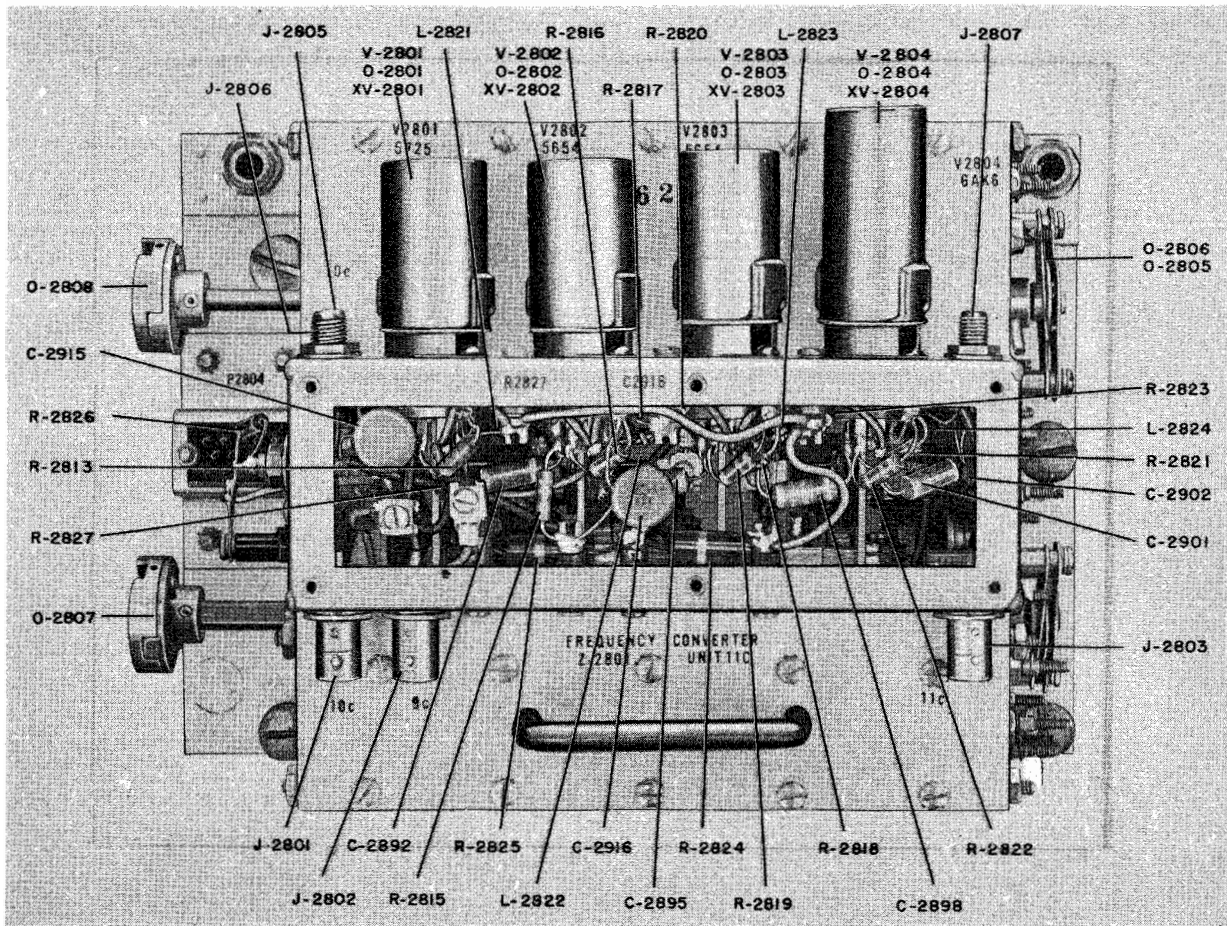


Figure 7-51. RFO, Unit 11C (Z-2801), Cover Removed, Right View

(a) F.S.O. ZERO ADJ. (R-2916) ADJUSTMENT.—F.S.O. ZERO ADJ. control is the fine adjustment for setting the unshifted frequency of unit 12 at 100 kc. Whenever tube V-2126, V-2127, or V-2128 is replaced, this control should be adjusted as follows:

Note

F.S.O. ZERO ADJ. may be adjusted from the front panel. Do not make this adjustment until unit 1 is properly aligned.

Step 1. Place equipment in a stand-by condition, OPERATE-STANDBY switch (P) in the STANDBY position. Ovens should be on at least one hour.

Step 2. Set controls as follows: F.S. DEVIATION (K) locked at 0; F.S.K. PHASE MOD. (L) fully counterclockwise; switch (Z) to F.S. OSC.

Step 3. Open the door covering knobs on front panel of the RFO. Adjust R-2916 (at upper right-hand corner labeled F.S.O. ZERO ADJ.) to get minimum frequency opening and closing of electron eye 6E5 mounted on front panel of RFO (ZERO BEAT INDICATOR). A minimum deviation in deflection is ideal. Refer to Section 2, for detailed electron eye indication.

An alternate method of checking the frequency of unit 12 may be accomplished by means of an external oscilloscope. Use Oscilloscope OS-8A/U or equivalent.

Follow steps 1 and 2 in the preceding frequency check.

Step 1. Connect cable from F.S. OSC. jack on the RFO front panel to the vertical input of the oscilloscope.

Step 2. Connect cable from 100 KC X-TAL jack on the RFO front panel to the horizontal input of the oscilloscope.

Step 3. Adjust R-2916, F.S.O. ZERO ADJ., to obtain a 1:1 Lissajous pattern on the oscilloscope. (Refer to figure 7-2.)

Note

If a 1:1 Lissajous pattern cannot be obtained by adjusting F.S.O. ZERO ADJ., pull the radio frequency oscillator (RFO) drawer out, bypass the interlock, and adjust L-2126 (located on the left side of unit 12; see figure 7-52) for a 1:1 Lissajous pattern on the oscilloscope. L-2126 is the coarse adjustment and

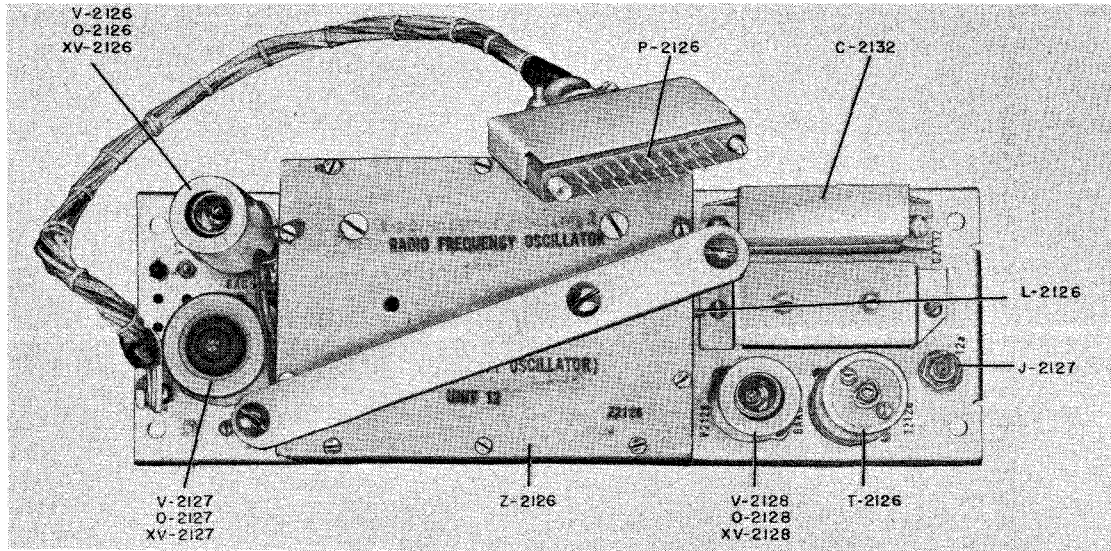


Figure 7-52. RFO, Unit 12 (Z-2127), Top View

should be adjusted with the F.S.O. ZERO ADJ. control in its midposition.

(b) F.S.O. RANGE ADJ. (R-2919) ADJUSTMENT.—The F.S.O. RANGE ADJ. control is adjusted so that F.S. DEVIATION (C.P.S.) control (KK) reads the deviation frequency correctly. It is adjusted as follows:

Note

Do not make this adjustment unless ovens have been operating at least one hour. The radio frequency oscillator (RFO) and the low level radio modulator (LLRM) must be properly aligned before making this adjustment.

Step 1. Check zero beat of unit 3; see paragraph 5b(1).

Step 2. Connect cable from 100 KC X-TAL jack on the RFO front panel to the vertical input of Oscilloscope OS-8A/U, or equivalent.

Step 3. Open the radio frequency amplifier (RFA) drawer, and on the right side (see figure 7-69) disconnect the cable from J-1308, mounted on the IPA assembly.

Step 4. Connect this cable to the horizontal input of the oscilloscope.

Step 5. Adjust NEUTRAL POLAR MARK (R-1079) keying voltage on LLRM to +10 volts.

Step 6. Set up a frequency of 0.399500 mc on the RFO frequency selection knobs.

Step 7. Transmitter controls should be set as follows: SERVICE SELECTOR (U) at FSK; switch (A) to INT.; F.S.K. PHASE MOD. (L) counterclockwise to

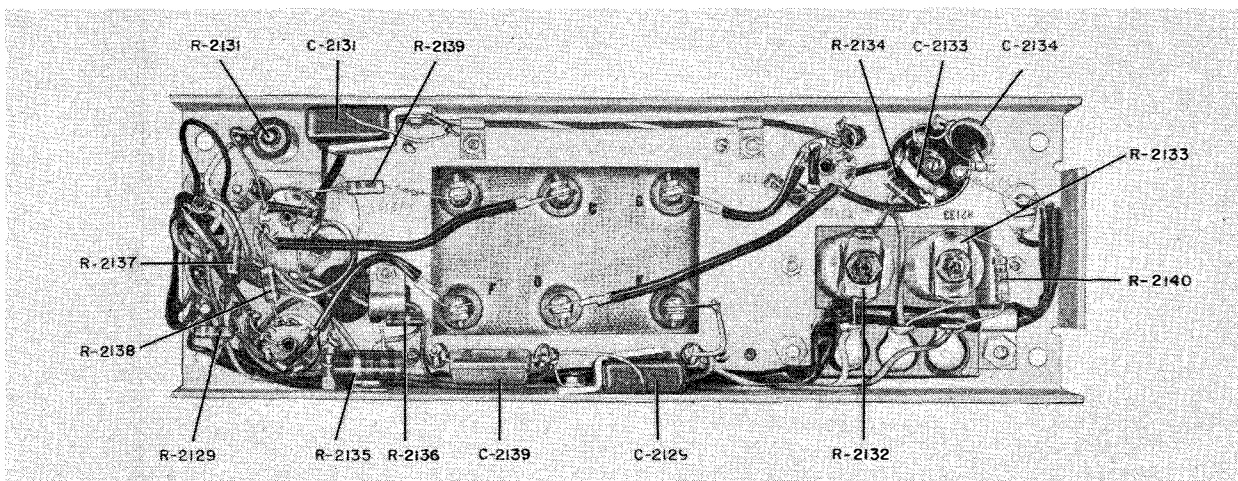


Figure 7-53. RFO, Unit 12 (Z-2127), Bottom View

7 Section

Paragraph 5 ee (1) (b)

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OFF; switch (PP) to STANDBY; TEST KEY (T) in "up" position; EXCITATION control (Z) clockwise; F.S. DEVIATION control (KK) at 500.

Step 8. Place switch (V) on LLRM front panel to the MARK position.

Step 9. Adjust F.S.O. RANGE ADJ. on RFO front panel for a 4:1 Lissajous pattern on the oscilloscope.

Step 10. Reset frequency selection knobs on RFO front panel to 0.400500 mc.

Step 11. Adjust (-) LIMIT KEYER OUT control on LLRM front panel for a 4:1 Lissajous pattern.

Step 12. Adjust F.S.O. RANGE ADJ., if necessary, so that F.S. DEVIATION control (KK) reads 500 ± 25 .

Note

Setting of the +10-volt and -10-volt FSK keying voltages (in the LLRM) should be

NOTES

1. ALL MEASUREMENTS TO GROUND UNLESS OTHERWISE INDICATED.
2. READINGS TAKEN WITH MULTIMETER ME-25A/U, VOLTAGE READINGS D-C UNLESS OTHERWISE INDICATED. USE THAT SCALE WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE, A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON A ONE VOLT SCALE; A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON A 250 VOLT SCALE.
3. TEST KEY (T) IN CENTER POSITION.
4. TRANSMITTER IN STANDBY. SERVICE SELECTOR (U) AT FSK POSITION.
5. RFO FREQUENCY SET AT 2 MC. BAND SWITCH (FF) AT .3-6 MC POSITION.

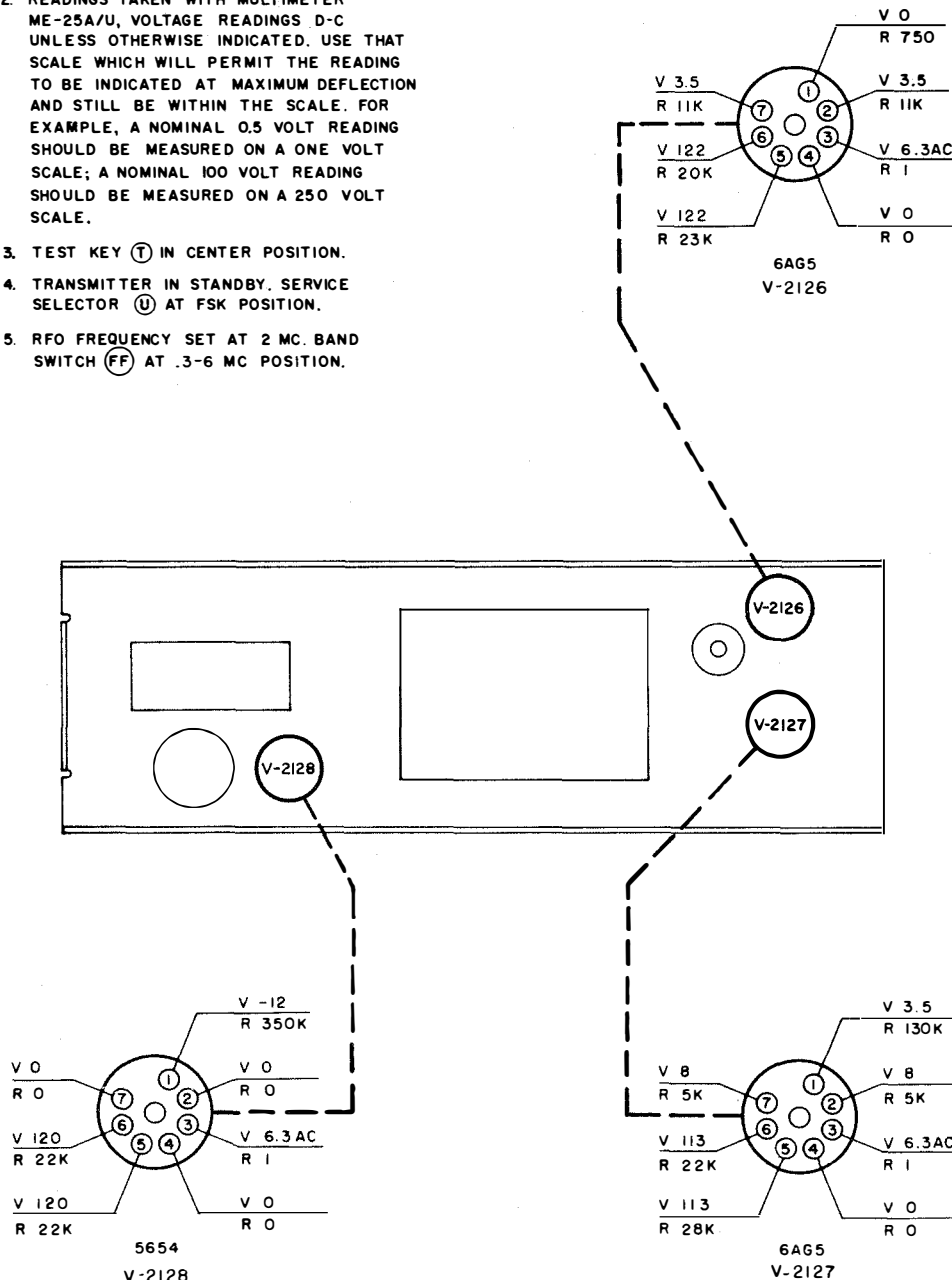


Figure 7-54. RFO, Unit 12 (Z-2127), Voltage and Resistance Chart

checked and reset if necessary (refer to paragraph 6b(1)(b)1 before adjustment of the F.S.O. RANGE ADJ. control.

(c) T-2126 ADJUSTMENT.—Low r-f output at test point 12a on unit 12 may indicate that T-2126 should be adjusted. Both the top and bottom slugs of T-2126 are adjusted for maximum output as indicated on Multimeter ME-25A/U, or equivalent, using the r-f probe. It should read approximately 10 to 13 volts.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—Unit 12 (figure 7-8) may be taken off the mounting by removing four screws, one at each corner of the chassis, and disconnecting the power plug. Replace screws and washers on standoffs while unit 12 is off the mounting so as not to misplace them.

The following steps should be taken to remove oven assembly Z-2126:

Step 1. Remove tubes V-2126, V-2127, and V-2128.

Step 2. Remove the screw in the oven retainer strap, fastened to the top of the oven.

Step 3. Remove two screws supporting the retainer strap standoffs at bottom of unit 12 and remove oven retainer strap and standoff assembly.

Step 4. Remove melamine terminal protective cover by removing the two screws on either side of the oven assembly.

Step 5. Remove screws supporting terminal lugs on melamine end plate.

Step 6. Disconnect lugs on bottom of oven and lugs labeled "T", "T", and "H" on left side of oven.

Step 7. Remove the four screws supporting oven assembly to chassis.

To remove thermostat S-2054 in oven assembly:

Step 1. Unsolder the two thermostat leads.

Step 2. Remove six remaining flathead screws around edge of oven assembly supporting terminal end plate.

Step 3. Remove the two large flathead screws on top of the oven. This will allow the upper part of the melamine box surrounding the oven assembly to be lifted free of the end plate. It is not necessary to remove this box entirely; merely loosen it from the terminal end plate and slide back toward V-2128.

CAUTION

Do not disturb the adjustment screws (L-2126) at the end of the oven assembly.

Step 4. The end terminal board should now be carefully tilted downward toward the chassis. This will allow access to the thermostat.

(b) REPLACEMENT AND ADJUSTMENTS.—To replace oven assembly Z-2126 and thermostat S-2054, reverse the removal procedure as indicated in paragraph 5ee(2)(a).

CAUTION

Do not force unit 12 power plug into position. Forcing may damage the pins on the connecting plug.

No adjustments are required on unit 12 unless a component has been replaced. When replacing a component, adjust according to procedure indicated in paragraph 5ee(1).

Note

UNIT 13 IS NOT USED IN AN/SRT-14, 15 AND 16.

ff. CONTROL-INDICATOR C-1352/SRT, TROUBLE SHOOTING.—The control of the tuning functions accomplished in the Antenna Coupler CU-372/SRT and R-F Tuner TN-229/SRT is from the Control-Indicator C-1352/SRT, mounted on the RFO front panel (figure 7-3).

The control-indicator contains seven controls and the indicating meters required to manually tune the antenna tuning equipment; see figures 7-3 and 7-55.

Locating trouble in the control-indicator is accomplished when trouble-shooting the complete antenna tuning equipment (paragraph 16a). A continuity check may be made of the control-indicator wiring, and relay and switch contacts may be cleaned and adjusted. Figure 7-151 is the schematic and figure 7-152 the wiring diagram.

gg. CONTROL-INDICATOR C-1352/SRT, REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—The only electrical adjustments required in the control-indicator are potentiometers R-411 and R-413, used to calibrate POSITION indicator meter M-402.

Calibration of the POSITION indicator meter is as follows:

Step 1. Transmitter in stand-by condition.

Step 2. Depress button $\text{\textcircled{AG}}$ labeled DOWN, on control-indicator, until the POSITION indicator meter is at minimum reading.

Step 3. Adjust ZERO ADJ., on control-indicator panel, to read 0 on the POSITION indicator meter.

Step 4. Depress button $\text{\textcircled{AF}}$ labeled UP, on control-indicator, until the POSITION indicator meter is at maximum reading.

Step 5. Adjust FULL SCALE ADJ., on control-indicator panel, to read 100 on the POSITION indicator meter.

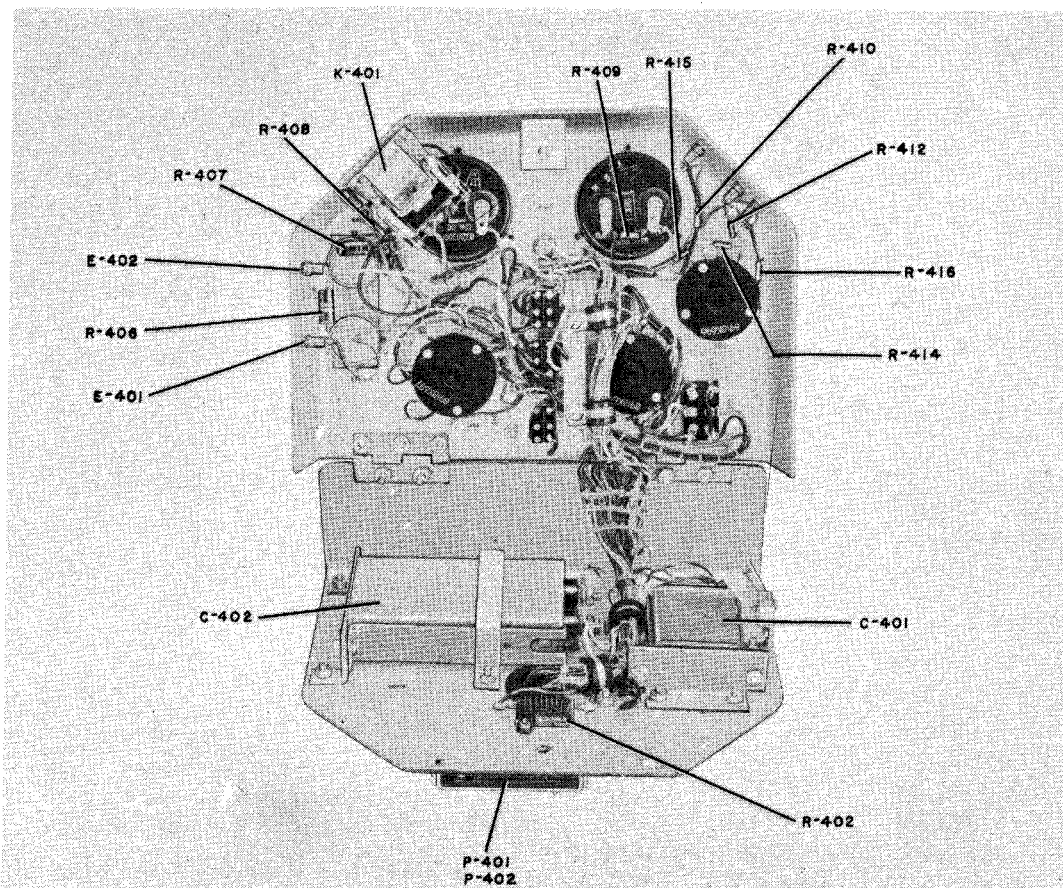


Figure 7-55. Control-Indicator C-1352/SRT, Inner View

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—The control-indicator may be removed from the RFO front panel as follows:

Step 1. Loosen the knurled screw on the control-indicator panel, allowing the control-indicator to open on its hinge.

Step 2. Remove the four screws supporting the rear panel of the control-indicator to the RFO front panel, and remove the control-indicator from the RFO.

CAUTION

When removing the control-indicator from the RFO, pull unit slowly and straight out so as not to bend any of the pins on the connecting plugs.

(b) REPLACEMENT AND ADJUSTMENTS.

—To replace the control-indicator, line up the four holes on the control-indicator with the four threaded holes on the RFO panel. Push the control-indicator in slowly until it is properly seated in position. Replace the four screws supporting the control-indicator rear panel to the RFO panel.

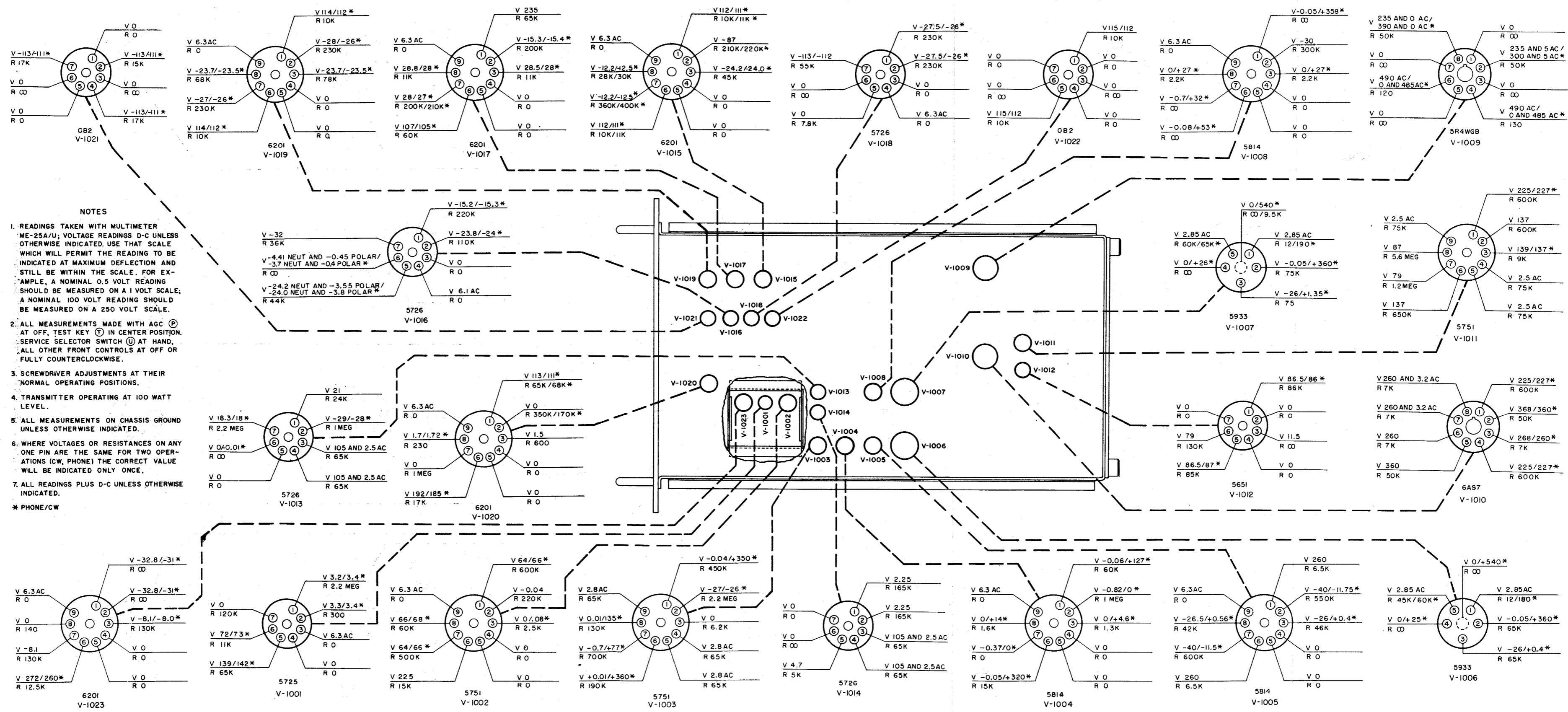
CAUTION

Do not force the control-indicator into position. Forcing may cause the pins on its connecting plugs to be damaged.

6. RADIO MODULATOR MD-229/SRT (LOW LEVEL RADIO MODULATOR, LLRM).

a. TROUBLE SHOOTING.—When a fault has been localized to the low level radio modulator (LLRM), first determine in which circuit the fault exists. To simplify trouble location, the LLRM is divided into three major circuit divisions: audio circuit, keying circuits, and power supply circuits. Refer to the schematic, figure 7-153, wiring diagram, figure 7-154 (sheets 1, 2 and 3), servicing block diagram, figure 7-155, and the voltage and resistance chart, figure 7-56.

(1) AUDIO CIRCUITS.—When trouble occurs in the audio circuits of the LLRM, the transmitter will not operate properly during phone operation. If there is no modulation present in the radio frequency amplifier (RFA) output during 100-watt or 500-watt operation, use an external oscilloscope (OS-8A/U, or equivalent) to locate the faulty portion of the audio circuits. The audio output of the LLRM can be observed on the oscilloscope as follows:



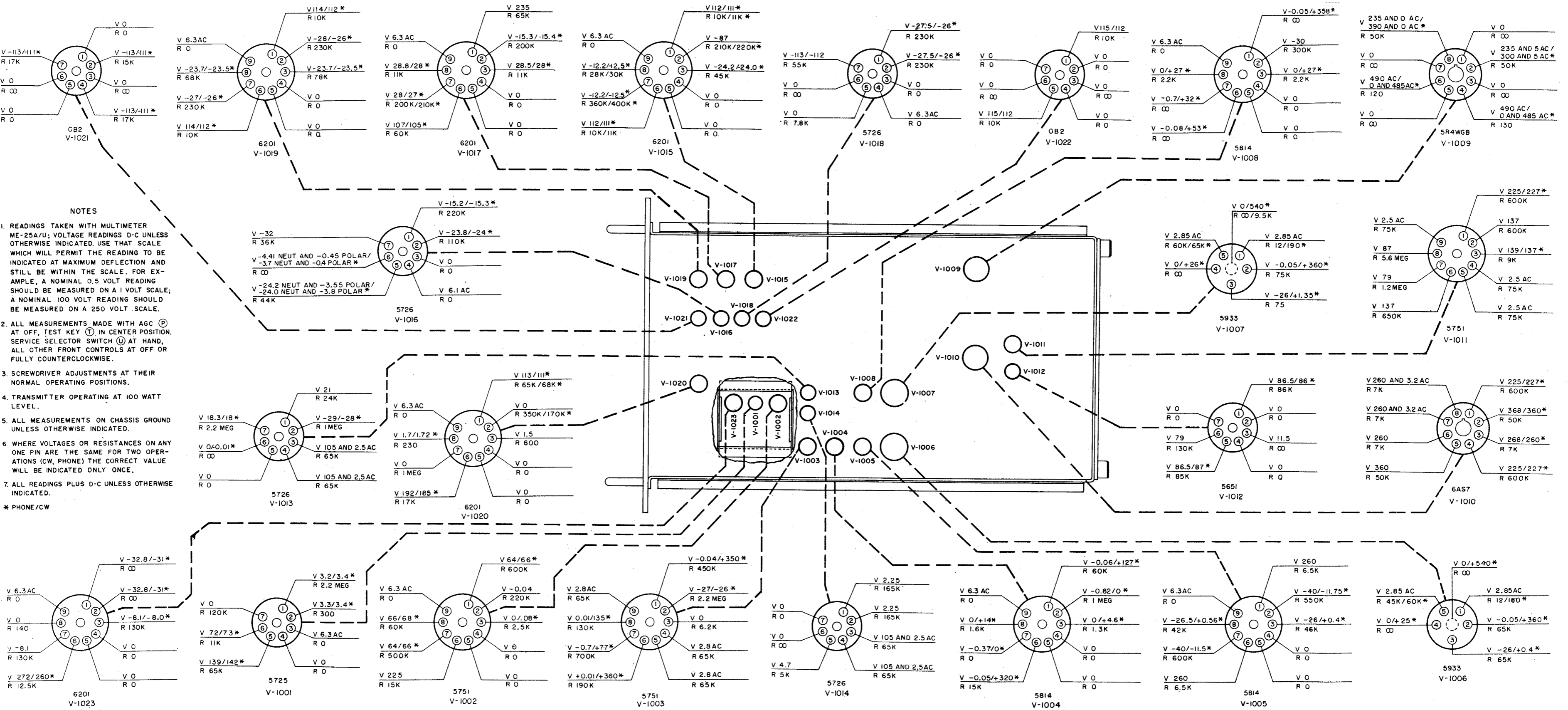
- NOTES**
1. READINGS TAKEN WITH MULTIMETER ME-25A/U; VOLTAGE READINGS D-C UNLESS OTHERWISE INDICATED. USE THAT SCALE WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE, A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON A 1 VOLT SCALE; A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON A 250 VOLT SCALE.
 2. ALL MEASUREMENTS MADE WITH AGC (P) AT OFF, TEST KEY (T) IN CENTER POSITION, SERVICE SELECTOR SWITCH (S) AT HAND, ALL OTHER FRONT CONTROLS AT OFF OR FULLY COUNTERCLOCKWISE.
 3. SCREWDRIVER ADJUSTMENTS AT THEIR NORMAL OPERATING POSITIONS.
 4. TRANSMITTER OPERATING AT 100 WATT LEVEL.
 5. ALL MEASUREMENTS ON CHASSIS GROUND UNLESS OTHERWISE INDICATED.
 6. WHERE VOLTAGES OR RESISTANCES ON ANY ONE PIN ARE THE SAME FOR TWO OPERATIONS (CW, PHONE) THE CORRECT VALUE WILL BE INDICATED ONLY ONCE.
 7. ALL READINGS PLUS D-C UNLESS OTHERWISE INDICATED.
- * PHONE/CW

ORIGINAL

Figure 7-56. LIRM, Voltage and Resistance Chart

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- NOTES**
1. READINGS TAKEN WITH MULTIMETER ME-25A/U; VOLTAGE READINGS D-C UNLESS OTHERWISE INDICATED. USE THAT SCALE WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE, A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON A 1 VOLT SCALE; A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON A 250 VOLT SCALE.
 2. ALL MEASUREMENTS MADE WITH AGC (P) AT OFF, TEST KEY (T) IN CENTER POSITION. SERVICE SELECTOR SWITCH (U) AT HAND, ALL OTHER FRONT CONTROLS AT OFF OR FULLY COUNTERCLOCKWISE.
 3. SCREWDRIVER ADJUSTMENTS AT THEIR NORMAL OPERATING POSITIONS.
 4. TRANSMITTER OPERATING AT 100 WATT LEVEL.
 5. ALL MEASUREMENTS ON CHASSIS GROUND UNLESS OTHERWISE INDICATED.
 6. WHERE VOLTAGES OR RESISTANCES ON ANY ONE PIN ARE THE SAME FOR TWO OPERATIONS (CW, PHONE) THE CORRECT VALUE WILL BE INDICATED ONLY ONCE.
 7. ALL READINGS PLUS D-C UNLESS OTHERWISE INDICATED.
- * PHONE/CW

Figure 7-56. LLRM, Voltage and Resistance Chart

(a) **RAPID PERCENTAGE MODULATION CHECK.**—For routine field percentage modulation check using the ANT. CURRENT meter on the radio frequency amplifier (RFA) front panel, refer to Section 6, table 6-4.

(b) **PRECISE PERCENTAGE MODULATION CHECK.**—A more precise method of checking the percentage of modulation by means of an external oscilloscope (OS-8A/U, or equivalent) may be accomplished as follows:

CAUTION

Turn both transmitter and oscilloscope off while making the following connections:

Step 1. Couple the r-f output of the transmitter (terminal on the rear of the ANT. CURRENT meter, figure 7-71) to the vertical deflection plates of the oscilloscope.

Note

A minimum amount of r-f coupling is desirable. This may be accomplished by connecting wires to both the ANT. CURRENT meter and the vertical input of the oscilloscope, and loosely coupling these wires without making any metallic connection between the two. Capacitive coupling between these wires should be varied as required to provide as near as possible a trapezoidal pattern without phase shift. Figure 7-57 (a, b, c) represents a typical modulation pattern, and (d) shows an ideal trapezoidal pattern.

Step 2. Connect the modulation output jack, J-1309 (see figure 7-69), provided for test purposes on the right side of the radio frequency amplifier (RFA) drawer, to the horizontal input jack of the oscilloscope.

Note

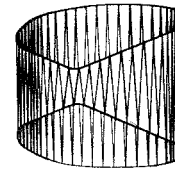
All leads from the RFA to the oscilloscope should be properly shielded to minimize crosstalk and phase shift.

Step 3. Place SERVICE SELECTOR switch (ⓐ) in PHONE position. Microphone switch (Ⓨ) must be in the proper position, the press-to-talk push button on the microphone must be depressed, and the microphone must be receiving a voice signal, with the transmitter "on the air".

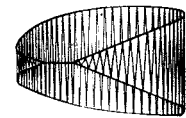
Step 4. Refer to figure 7-57 for typical percentage modulation waveforms and adjust the % MOD. control (Ⓝ) for 100 percent modulation at audio peaks.

If no output appears on the oscilloscope during the modulation check, turn the equipment off, and disconnect leads from the RFA and oscilloscope.

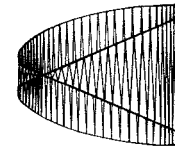
The following trouble-location steps outline a procedure for localizing trouble by the general process of



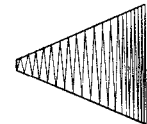
(a)
UNDERMODULATION



(b)
OVERMODULATION



(c)
100% MODULATION



(d)

Figure 7-57. Typical Percentage Modulation Patterns

isolating incorrectly operating circuit elements in the audio amplifier chain.

Using oscilloscope OS-8A/U cable W101, connect the vertical input of the oscilloscope to pin 3 of tube V-1004. See figure 7-58.

WARNING

The LLRM uses voltages that are dangerous to life. Extreme caution should be exercised when working with the LLRM drawer pulled all the way out.

No connection is made to the horizontal input of the oscilloscope; use internal sync and adjust for suitable display on the cathode-ray tube.

If no signal appears on the oscilloscope, the fault lies in one or more of the following stages (refer to the LLRM block diagram, figure 7-155):

- Preamplifiers V-1001 and V-1002A
- Cathode follower V-1002B
- Clipper V-1014
- Audio amplifier V-1004A

If a signal appears on the oscilloscope, the fault may lie in one or more of the following stages:

- Phase inverter V-1003B
- Cathode followers V-1005A and V-1005B
- Power amplifiers V-1006 and V-1007
- AGC rectifier V-1013A
- Squelch multivibrator V-1008
- Squelch rectifier CR-1002
- Limiter V-1013B

To readily determine whether the fault is in the last three stages (squelch circuit), use a clip lead and ground pin 2 on V-1013B (see figure 7-58), thus disabling the squelch circuit.

Make a stage-by-stage check by connecting a 1,000-cps audio signal to pin C of HANDSET jack (J-1106) on the front panel of the LLRM, figure 7-62. (An audio oscillator such as models LAJ, LAJ-1, LAJ-2, and TS-382A/U may be used, with a signal amplitude of approximately 25 millivolts.) Place carrier "on the air" by grounding pin D of HANDSET jack.

If it has been determined the fault does not exist in the squelch circuit, leave pin 2 of V-1013B grounded, thus keeping the squelch circuit inoperative. The oscilloscope probe, connected to the vertical input jack of the oscilloscope, may now be used to make the stage-by-stage check of the audio circuits.

Step 1. Place ground connection between the oscilloscope and LLRM drawer.

Step 2. Set the oscilloscope on internal sync (no connection on horizontal input).

The audio signal should be visible on the oscilloscope in increasing amplitude as the probe is advanced from the grid to the plate of each audio amplifier (see block diagram, figure 7-155). When a signal is present at the input to a stage and not at the output, that stage is faulty. Table 7-31 will aid the technician in locating a fault in the LLRM audio circuits.

(2) **KEYING CIRCUITS.**—When trouble occurs in the keying circuits of the LLRM, the transmitter will not operate properly during hand (HAND) keying, machine (MACH) keying and frequency-shift keying (FSK).

The mode of operation as selected by the SERVICE SELECTOR switch ⑩ will determine the particular keying circuits employed.

In both hand and machine keying, the carrier is turned on the air. At the same time an audio oscillator produces an audio signal for aural monitoring of the keying signal. In frequency-shift keying, signals are produced that control the operation of the frequency-shift oscillator (unit 12) in the radio frequency oscillator (RFO) and can be phase-modulated by an audio signal.

In photo transmission (FAX) the sole function of the LLRM is to connect the FAX input directly to the deviation control R-2917 on unit 14 of the RFO.

Table 7-32 will aid the technician in locating a fault in the LLRM keying circuits. Refer to the servicing block diagram, figure 7-155, the schematic, figure 7-153, and the voltage and resistance chart, figure 7-56. The LLRM front panel component locations and unit adjustments are shown in figures 7-62 and 7-63, respectively.

(3) **POWER SUPPLY CIRCUITS.**—Contained in the LLRM is a +250-volt regulated power supply. This voltage is supplied to the keying and audio stages.

The -12-volt power supply provides operating voltage for the carbon microphone.

The antenna bypass transfer circuit consists of relay K-1102 and tube V-1023.

TABLE 7-31. INDICATIONS OF FAILURE AND PROBABLE FAULTS IN THE LLRM AUDIO CIRCUITS

| INDICATION OF FAILURE | PROBABLE FAULT |
|---|---|
| Carrier undermodulated. | GAIN TO CLIP ⑩ maladjusted. If readjustment does not help, check adjustment of % MOD ⑨ control and amplification of audio stages. |
| Carrier overmodulated. | GAIN TO CLIP ⑩ maladjusted. If readjustment does not help, check adjustment of % MOD ⑨ control and clipper V-1014. |
| Modulation present with carbon microphone but not with dynamic microphone. | Dynamic microphone, microphone input control switch CARBON DYN ⑧, or pre-amplifier V-1001. |
| Modulation present with dynamic microphone but not with carbon microphone. | Carbon microphone, microphone input control switch CARBON DYN ⑧, microphone input transformer T-1103, or -12-volt power supply. |
| No sidetone signal or amplitude very low. | SIDETONE control ⑦ maladjusted or sidetone amplifier V-1004B (if modulation is present). |
| Carrier modulated by noise when press-to-talk push button is depressed (without voice). | Squelch circuit (V-1008 and CR-1002) and SQUELCH TRIG control ⑥. |
| Carrier undermodulated and audio signal distorted. | Cathode followers V-1005A and V-1005B. Power amplifiers V-1006, V-1007. |
| Noise or howling in audio. | Microphonic stage V-1001 and V-1002. |

TABLE 7-32. INDICATIONS OF FAILURE AND PROBABLE FAULTS IN THE LLRM KEYING CIRCUITS

| INDICATION OF FAILURE | PROBABLE FAULT |
|--|---|
| Carrier does not key. | Remote radiophone unit, relays K-1306 in the RFA, K-1101 and K-1107, buffer V-1015A, keying control V-1016, multivibrator V-1017, dumping tube V-1015B, limiter V-1018, and keyer V-1019. |
| Does not key in HAND, MACH, and FSK positions. | SERVICE SELECTOR switch (U), S-1101, LOCAL-REMOTE switch (X), V-1015, V-1016, V-1017, V-1018 and V-1019. In MACH and FSK service, voltage regulators V-1021 and V-1022. |
| No monitoring signal in HAND and MACH positions. | Audio oscillator V-1020 and amplifier V-1004. |
| Screen overload in power amplifier stage (RFA). | Operate reset button (K); if condition still exists check V-1015 and V-1005. |
| Transmitter keying output garbled. | KEYING RATE switch (S), TIME CONST. ADJ. CONTROL (on preamplifier chassis) and LLRM front panel screwdriver UNIT ADJUSTMENTS. |
| Keying transients present in RFA output waveform during key operation. | Dumping circuit V-1015 and cathode follower V-1005. |

Table 7-33 will aid the technician in locating a fault in the LLRM power supply circuits. Refer to the schematic, figure 7-153, and the voltage and resistance chart, figure 7-56.

b. REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.

(a) AUDIO CIRCUITS.

1. CLIPPER SYM. CONTROL.—The clipper symmetry control is a unit adjustment, adjusted to compensate for differences in plate current characteristics of the speech clipper tube, V-1014, and provide equal positive and negative clipping action; it may be adjusted as follows:

Extend LLRM drawer and remove protective cover plates to make the following connections:

Step 1. SERVICE SELECTOR switch (U) at PHONE position. CARBON-DYN. switch (Y) at CARBON position. AGC ON-OFF switch (P) at OFF position. GAIN TO CLIP (M) full clockwise position. SQUELCH TRIG (L) full counterclockwise position. LOCAL-REMOTE (X) at LOCAL position.

Step 2. Connect audio signal generator (such as LAJ series) set at 1,000 cps to terminal 3 of trans-

former T-1003, accessible at the bottom of the LLRM drawer, figure 7-59.

Step 3. Connect oscilloscope probe (OS-8A/U, or equivalent) from vertical input of oscilloscope to pin 1 of tube V-1014.

Step 4. Turn transmitter and test equipment on.

CAUTION

VOLTAGES DANGEROUS TO LIFE ARE PRESENT.

Step 5. Adjust the oscilloscope (OS-8A/U or equivalent) horizontal frequency control so as to display two cycles on the cathode-ray tube.

Step 6. Adjust GAIN TO CLIP control (M) until a small amount of clipping of the 1,000-cps signal appears on the oscilloscope. This is evidenced by flattening of the peaks of the 1,000-cps sine wave.

Step 7. Adjust CLIPPER SYM. control for symmetrical clipping on top and bottom of the sine wave, figure 7-60. Readjust control (M) as necessary to maintain the desired signal amplitude.

2. GAIN TO CLIP (M) AND SQUELCH TRIG. (L) CONTROLS.—The GAIN TO CLIP (M) con-

TABLE 7-33. INDICATIONS OF FAILURE AND PROBABLE FAULTS IN THE LLRM POWER SUPPLIES

| INDICATION OF FAILURE | PROBABLE FAULT |
|---|--|
| No 250-volt output. | Fuses F-1001 and F-1002, rectifier V-1009, regulators V-1010, V-1011 and V-1012. |
| Poor regulation. | Regulator V-1010, regulator control V-1011 and voltage regulator V-1012. |
| No filament voltage. | LLRM filament circuit including F-1002. |
| No sidetone. | -12-volt supply. |
| Bypass transfer circuit does not operate. | Relay K-1102 and tube V-1023 on preamplifier chassis. |

trol is a front panel control knob and its adjustment is a function of operation. Section 4 indicates the method for proper adjustment of this control. It should provide clipping action as indicated in figure 7-60. SQUELCH TRIG. (L) control is also a front panel control knob adjusted as a function of operation. Setting this control adjusts the speech signals to noise level ratio during pauses in speech. Refer to Section 4 for the procedure of adjusting this control during operation.

3. 500 W. AUDIO LEVEL CONTROL.—

The 500 W. AUDIO LEVEL control is a unit adjustment used as a modulation compensating control during 500-watt operation. It is adjusted to provide 100 percent modulation in 500-watt operation. With % MOD. control (N) properly adjusted (see paragraph 6a(1)) for 100-watt operation, the 500 W. AUDIO LEVEL is adjusted to provide 100 percent modulation at the 500-watt level. Use the percentage modulation adjustment method as outlined in paragraph 6a(1).

(b) KEYING CIRCUITS.

1. NEUTRAL POLAR MARK AND POLAR SPACE CONTROLS.—These controls are unit adjustments and are adjusted by means of an external test circuit, figure 7-61. This test circuit simulates variable voltage source of machine-keying operation. Components required are: a 45-volt battery, a 50 K potentiometer, and a double-pole, double-throw switch wired as illustrated in figure 7-61.

Step 1. Transmitter at 100-watt level, switch (P) at STANDBY; SERVICE SELECTOR switch (U) at MACH; NEUT. POLAR switch (R) at NEUT.; TEST KEY (T) at center position.

Step 2. Connect output of test circuit between terminal 9R of S-1101A and chassis ground. This terminal (9R) has a gray-red wire connected to it. S-1101A is the first switch wafer of the service selector switch (U). See figure 7-58.

Step 3. Connect Multimeter ME-25A/U, or equivalent, between the KEY V. IN of TEST POINTS

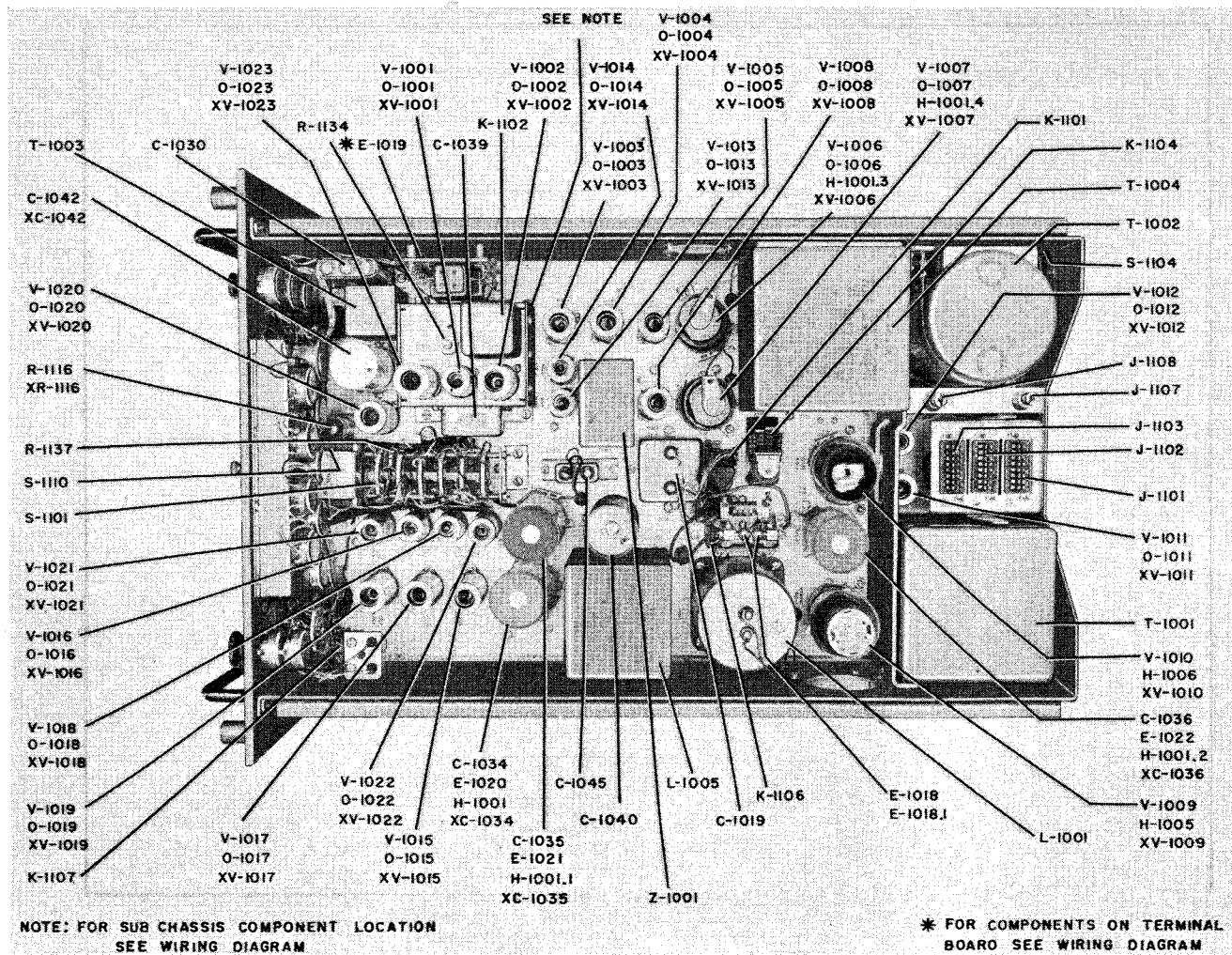


Figure 7-58. Radio Modulator MD-229/SRT (LLRM), Top View

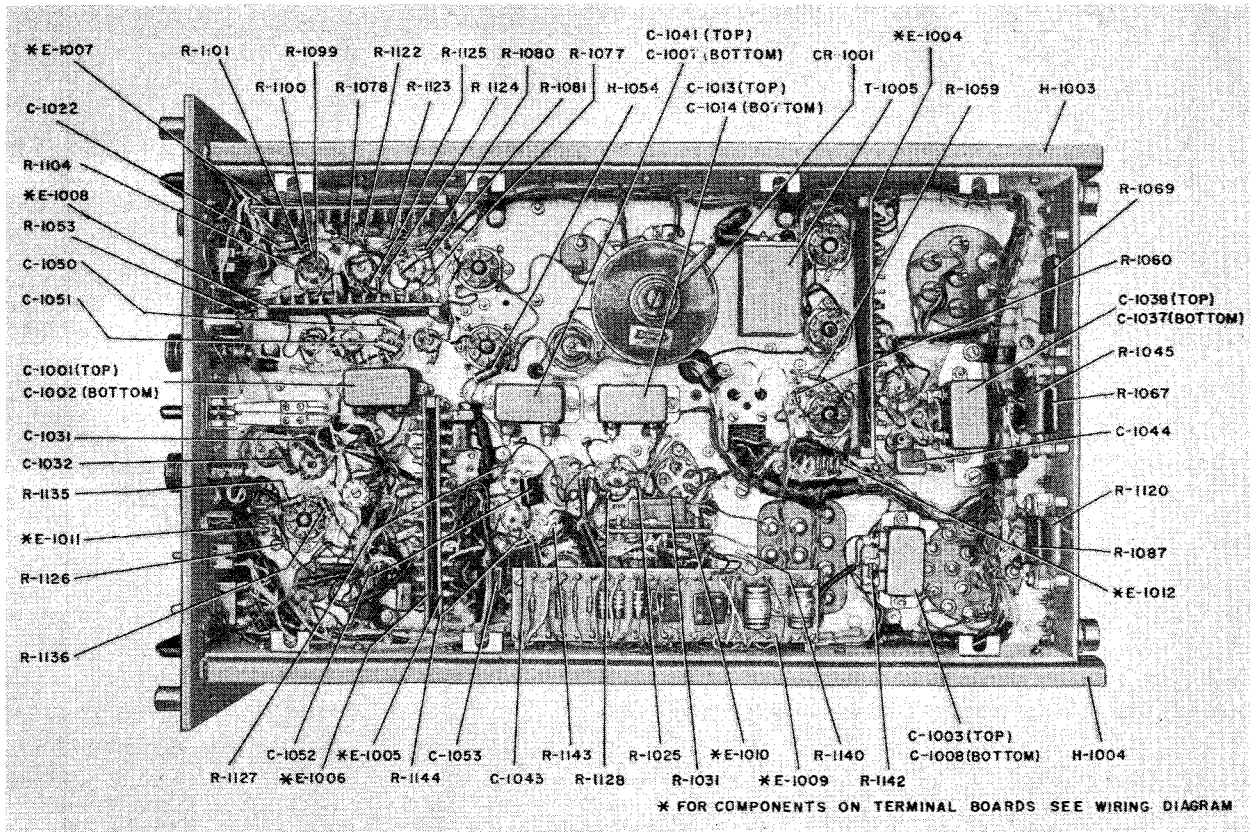


Figure 7-59. Radio Modulator MD-229/SRT (LLRM), Bottom View

socket E-2919 (located on the left side of the RFO, figure 7-6) and chassis ground.

Step 4. With the test circuit output adjusted at zero volts, Multimeter ME-25A/U connected to KEY V, IN should read negative or space condition. Set NEUTRAL POLAR MARK control to full counter-clockwise position.

Step 5. Adjust the test circuit output to approximately +28 volts. Slowly advance NEUTRAL POLAR MARK control until the meter just snaps to zero volts, mark condition. Lock NEUTRAL POLAR MARK control.

Step 6. Set NEUTRAL POLAR switch (R) to POLAR and POLAR SPACE control to full counter-clockwise position.

Step 7. Set test circuit output to +30 volts to insure that keyer is in mark condition, and then set the test circuit output to -30 volts (operate the DPDT switch of test circuit).

Step 8. Slowly advance the POLAR SPACE control until the keyer goes into space condition (negative reading on meter). Lock POLAR SPACE control.

2. (+) LIMIT AND (-) LIMIT CONTROLS.—The (+) LIMIT and (-) LIMIT unit adjustment controls are the coarse adjustments for the

frequency-shift operation of unit 12 in the RFO. These controls are adjusted to provide a symmetrical frequency-shift output as indicated in the RFO unit 12 alignment procedure of paragraph 5ee(1). These limits may be checked at the RFO test points socket E-2919 as follows:

Step 1. With transmitter in stand-by condition, set the SERVICE SELECTOR switch (U) at FSK.

Step 2. Connect multimeter (ME-25A/U, or equivalent) between the VOLTS MARK SPACE of test socket E-2919, on the RFO, and chassis ground (figure 7-6).

Step 3. Check for a reading of approximately -10 volts on meter.

Step 4. Operate switch (V) to MARK and check for approximately +10 volts on meter.

Note

The setting of these controls should be checked when proper results are not obtained in the checking of F.S. DEVIATION control (K), in paragraph 5ee(1).

3. ZERO ADJ. CONTROL.—This control is a unit adjustment and its setting should be checked as follows:

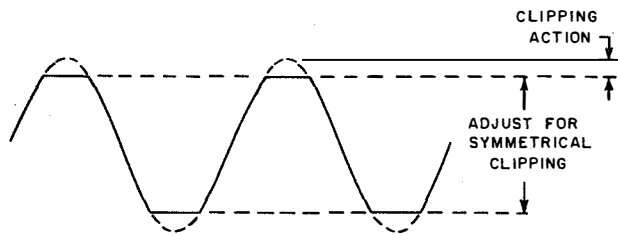


Figure 7-60. Symmetrical Clipping Waveform

Step 1. With the transmitter in stand-by condition set SERVICE SELECTOR switch (U) in HAND position.

Step 2. Remove clipper tube V-1018 (see figure 7-58).

Step 3. Connect meter, ME-25A/U (or equivalent), between pin 1 of XV-1018 and chassis ground. Set meter on +100-volt scale.

Step 4. Operate TEST KEY (T) to its locked-up position and adjust ZERO ADJ. for a reading of +25 volts on the meter.

Step 5. Return TEST KEY (T) to its normal position and reverse the polarity of the meter. The meter should now read approximately -30 volts (± 10 volts).

Step 6. Set SERVICE SELECTOR switch (U) to the MACH. position. The meter should still read as in step 5.

Step 7. Reverse polarity of meter and operate switch (V) to MARK. The meter should now read as in step 4.

Step 8. Disconnect meter and replace V-1018 and its tube shield.

4. AUDIO OSC. FEEDBACK CONTROL.—The AUDIO OSC. FEEDBACK control is a unit adjustment and may be adjusted as follows:

Step 1. Transmitter in stand-by, SERVICE SELECTOR switch (U) at FSK.

Step 2. Connect a 200-cycle output (LAJ series, or equivalent) to the vertical input of Oscilloscope OS-8A/U (or equivalent).

Note

Adjust the audio generator output voltage level to provide approximately 1-inch deflection on oscilloscope.

Step 3. Using "internal sync", adjust horizontal fine frequency control on Oscilloscope OS-8A/U for a 2-cycle display and adjust vertical gain so that two complete sine waves may be observed, and note the amplitude.

Step 4. Disconnect the external audio oscillator from the oscilloscope, and in its place connect the 200-cycle output of the wobbulator circuit. This output is measured by connecting the vertical input of the oscil-

loscope (OS-8A/U or equivalent) to the white-blue-green wire of the fourth wafer (counting from front to rear) on the SERVICE SELECTOR switch (U) S-1101. (See figure 7-58.)

Note

Keep the same setting of the oscilloscope controls as for the external audio signal generator.

Step 5. Adjust the AUDIO OSC. FEEDBACK control for the same amplitude as noted in step 3.

The 200-cycle wobbulator output is fed to the F.S.K. PHASE MOD. control (L) in the RFO (unit 14). Its operation may be observed by connecting the vertical input of the oscilloscope (OS-8A/U, or equivalent) to the arm of this control. Connection may be made by pulling the RFO drawer out, removing unit 6 and placing on extension test cables. Connect vertical input of oscilloscope to terminal 3 of transformer T-2916. Refer to figures 7-5 and 7-121. An increase and decrease of 200-cps amplitude should be observed as this control is rotated.

5. TIME CONSTANT ADJ. CONTROL.—When replacing tube V-1023 in the preamplifier subchassis, it may be necessary to readjust the TIME CONSTANT ADJ. control mounted on this subchassis. This adjustment is a function of operation; for a detailed explanation of its setting, refer to Section 4.

(c) POWER SUPPLY CIRCUITS.

1. 250 V.P.S. CONTROL.—This control is a unit adjustment for the 250-volt regulated power supply. It provides regulated plate voltage to both the low level radio modulator (LLRM) and the radio frequency oscillator (RFO) and is adjusted in the following manner:

Step 1. Place the equipment in stand-by condition, switch (PP) in STANDBY.

Step 2. Connect meter (ME-25A/U, or equivalent) to either the 250 V.P.S. test jack provided on the LLRM front panel (J-1110), figure 7-62, or at the RFO test point socket, E-2919 (on the left side of the RFO drawer; see figure 7-6).

Step 3. Set the 250 V.P.S. control (figure 7-63) for a 250-volt reading on the ME-25A/U Multimeter.

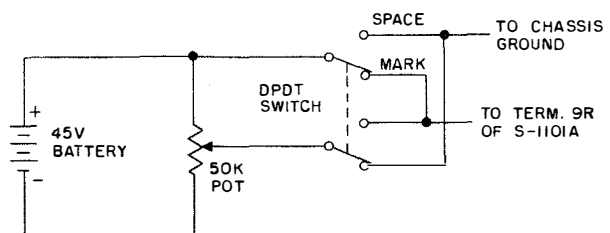


Figure 7-61. LLRM Test Circuit for Simulating Keying Signals

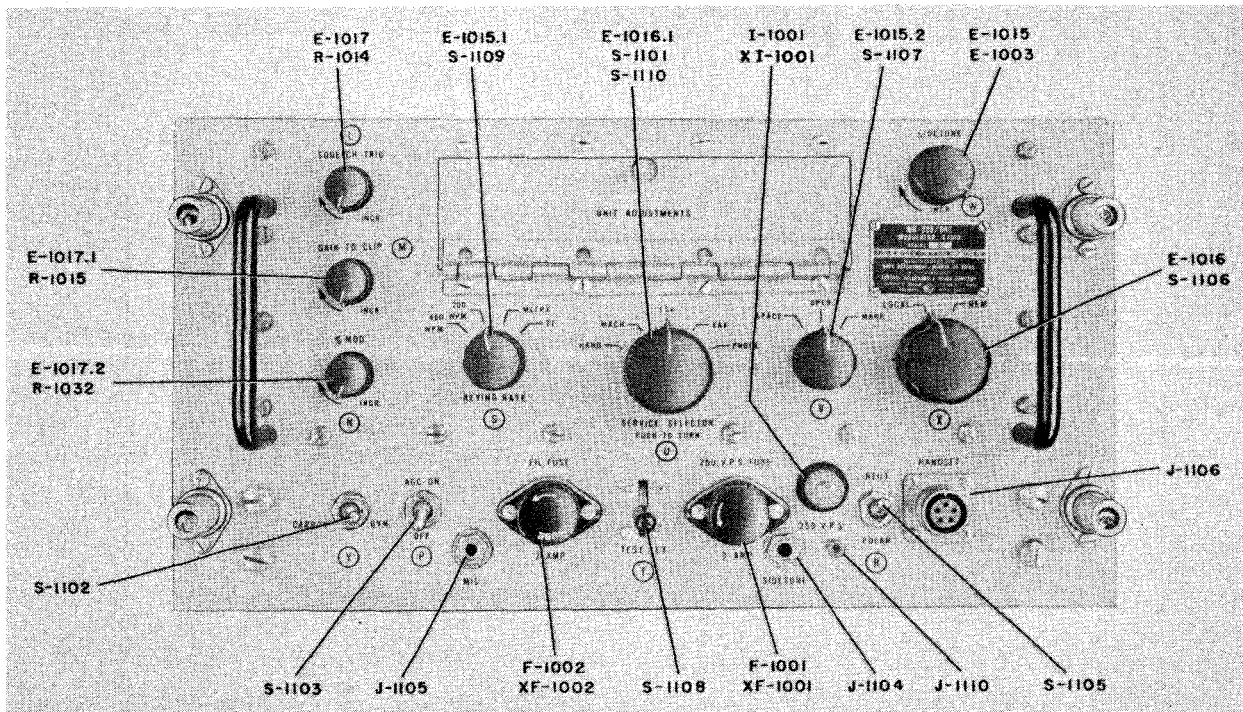


Figure 7-62. Radio Modulator MD-229/SRT (LLRM), Front Panel

2. -12-VOLT SUPPLY.—There are no electrical adjustments for the -12-volt supply. The output of this supply may be checked by connecting a meter (ME-25A/U, or equivalent) between pin D of HAND-SET jack J-1106 (on LLRM front panel, figure 7-62) and chassis ground.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—To remove the LLRM from the transmitter group cabinet, loosen the four front panel captive screws and pull the LLRM drawer out to its stop. Remove the interconnecting cable at the rear of the drawer and lift the drawer and remove it from the transmitter group cabinet. The preamplifier subchassis may be removed by loosening the four 1/4-turn fasteners and removing the subchassis from the main chassis.

CAUTION

When removing the preamplifier subchassis, pull slowly and straight up so as not to bend any of the pins on the connecting plug.

Note

If necessary, the air gap on the ball gap assembly of relay K-1106 should be set for a 0.020-inch air gap.

WARNING

Short the ball gap assembly to ground before adjusting the air gap.

(b) REPLACEMENT AND ADJUSTMENTS.

—To replace the preamplifier subchassis, push down slowly until it is properly seated into position, and tighten the fasteners. The LLRM drawer is replaced as indicated in paragraph 4b.

CAUTION

Do not force the subchassis into position. Forcing may cause the pins on its connecting plug to be damaged.

7. RADIO MODULATOR MD-230/SRT, HIGH LEVEL RADIO MODULATOR (HLRM).

a. TROUBLE SHOOTING.—If the carrier is not modulated in PHONE during 500-watt operation, but is modulated during 100-watt operation, the high level radio modulator (HLRM) is probably faulty. Check the 3000 V and 350 V SCREEN indicator lights. The 350 V SCREEN indicator light will go on only when the press-to-talk push button on the microphone is depressed. If the 350 V SCREEN indicator light does not go on, check connections to terminal board E-1606, relay K-1601, and associated circuit in the HLRM sub-unit chassis. See figures 7-64 and 7-65 for component locations. If the 3000 V indicator light does not go on, check the interconnecting high voltage cable and the high voltage source from the high voltage Power Supply PP-1096/SRT (HVPS). Check the fuses in the HVPS. (See Section 5, table 5-4.) If the TIME DELAY indicator light of the high voltage Power Supply PP-1096/SRT is on, use the VOLTMETER on the

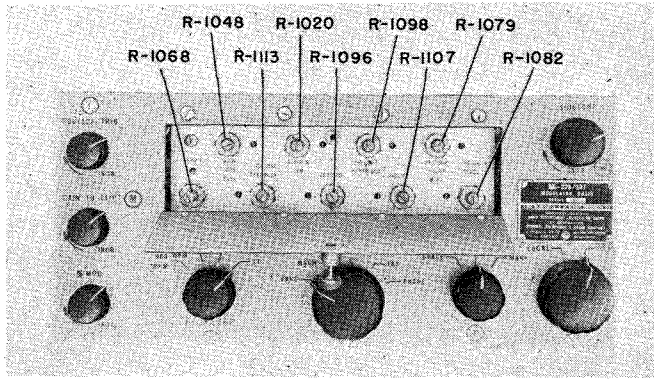


Figure 7-63. Radio Modulator MD-229/SRT Unit Adjustments, Door Opened

Radio Frequency Amplifier AM-1008/SRT (RFA) front panel and VOLTMETER switch (J) to PA E_b (5000 V) position, to measure the voltage. If no voltage is present, check HVPS indicator lights H.V. PRIMARY ϕ 1, ϕ 2 and ϕ 3. If any of these lamps do not light, refer to the HVPS trouble location section, paragraph 11a.

If the 3000 V and 350 V SCREEN indicator lamps are on but the HLRM does not operate (no voice modulation in phone during 500-watt operation), check the input signals to audio amplifiers V-1601 and V-1602 at test points GRID 1, V-1601, and GRID 1, V-1602,

provided on the front panel of the HLRM (figure 7-65). If input signals are present, check tubes V-1601 and V-1602.

WARNING

THE HLRM USES VOLTAGES THAT ARE DANGEROUS TO LIFE. EXTREME CAUTION MUST BE EXERCISED WHEN WORKING ON THE HIGH LEVEL RADIO MODULATOR (HLRM).

If the bias of -50 volts is not present at the grids of V-1601 and V-1602, check the -50-volt bias supply. The bias supply consists of a selenium rectifier mounted on the HLRM subunit chassis (figure 7-64) and is connected to the grids of tubes V-1601 and V-1602 from terminal board E-1606 terminal No. 8.

Table 7-34 will aid the technician in locating a fault in the HLRM.

The HLRM voltage and resistance chart, figure 7-66, the schematic diagram, figure 7-156, and the wiring diagram, figure 7-157, can be used to locate the faulty component.

WARNING

Do not measure the high voltage (3,000 volts) present in this drawer. Resistance measurements can be made with all power removed

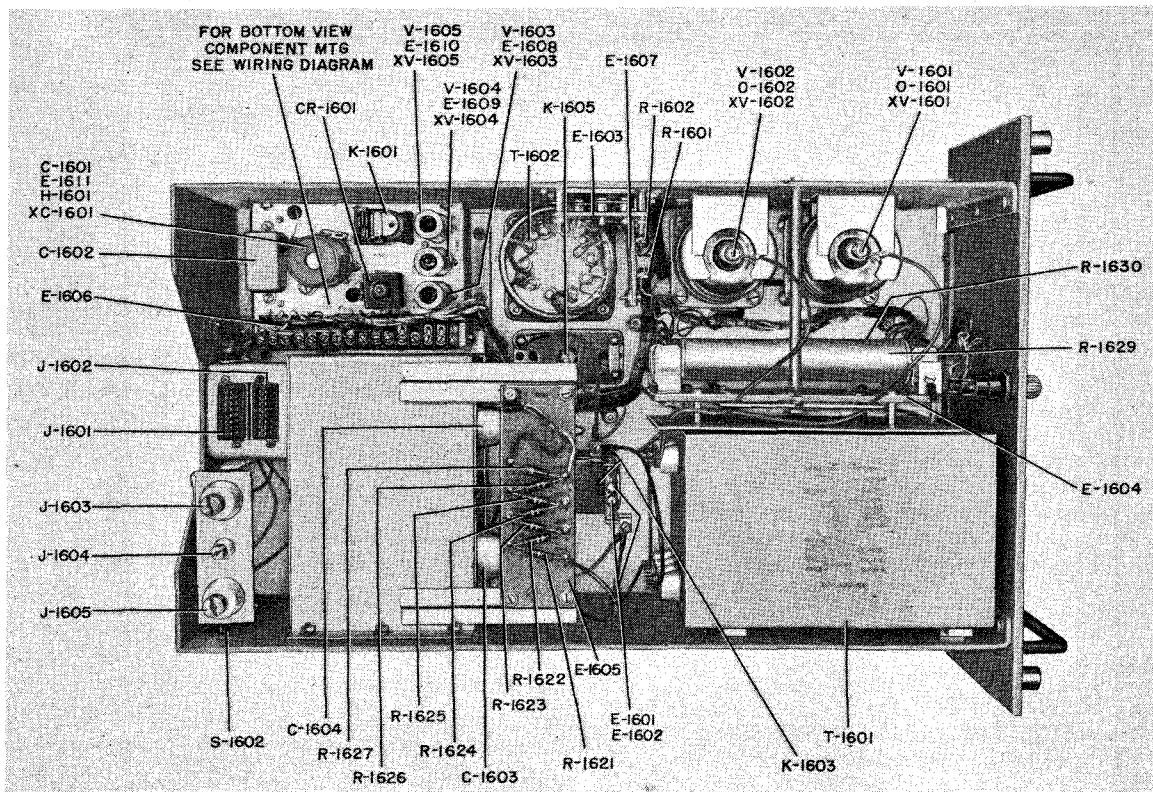


Figure 7-64. Radio Modulator MD-230/SRT (HLRM), Top View

TABLE 7-34. INDICATIONS OF FAILURE AND PROBABLE FAULTS IN THE HLRM

| INDICATION OF FAILURE | PROBABLE FAULT |
|---|---|
| No modulation in 500-watt operation. | No high voltage from HVPS. Relay K-1605. V-1601 and V-1602. Relay K-1601 and K-1603. |
| Input signals present at GRID 1 V-1601 and GRID 1 V-1602 but no modulation. | Tubes V-1601 and V-1602. |
| No bias at grids of V-1601 and V-1602. | Bias supply in HLRM subunit chassis. |
| 350 V SCREEN does not light, but 3000 V does light. | No high voltage from HVPS. Tubes V-1603, V-1604, and V-1605. |

from the HLRM. Before working on the HLRM, short all circuits to ground with a shorting probe.

By removing V-1601 and V-1602, resistance can be measured at the tube sockets.

b. REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—None.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—To remove the HLRM from its cabinet, refer to paragraph 4a.

All HLRM components, figure 7-64, are accessible from the top of the HLRM drawer. There are no components on the bottom of the HLRM chassis.

To remove tubes V-1601 and V-1602, remove the plate cap clip, loosen the two screws holding the tube

clamp, remove the clamp, and carefully pull the tube out of its socket.

To remove the HLRM subunit chassis, remove the four mounting screws accessible from the bottom of the HLRM drawer.

Disconnect subunit interconnecting cable at terminal board E-1606 and remove subunit chassis.

When using the extension test cable on the HLRM, loosen the screws at the rear of the HLRM drawer supporting J-1601 and J-1602 bracket.

Move bracket up as far as possible and tighten screws at the rear of the HLRM drawer. This will permit use of the extension test cable.

(b) REPLACEMENTS AND ADJUSTMENTS.

—To replace the HLRM drawer, refer to paragraph 4b. To replace tubes V-1601 and V-1602, and the subunit chassis, reverse the removal procedures.

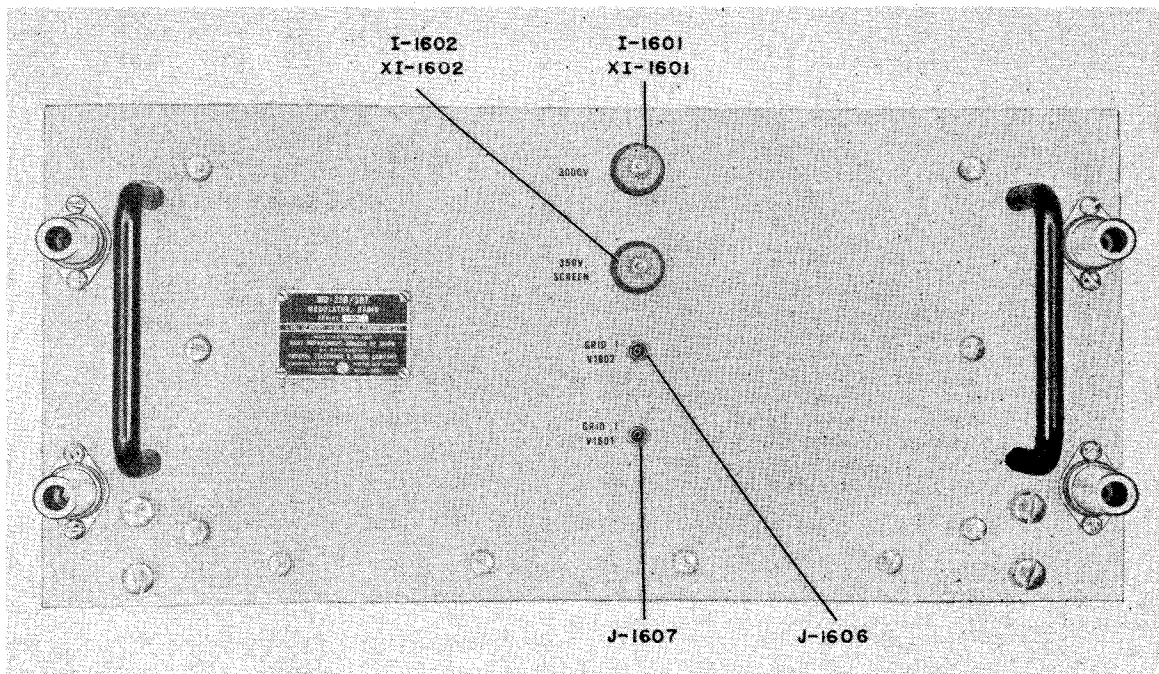
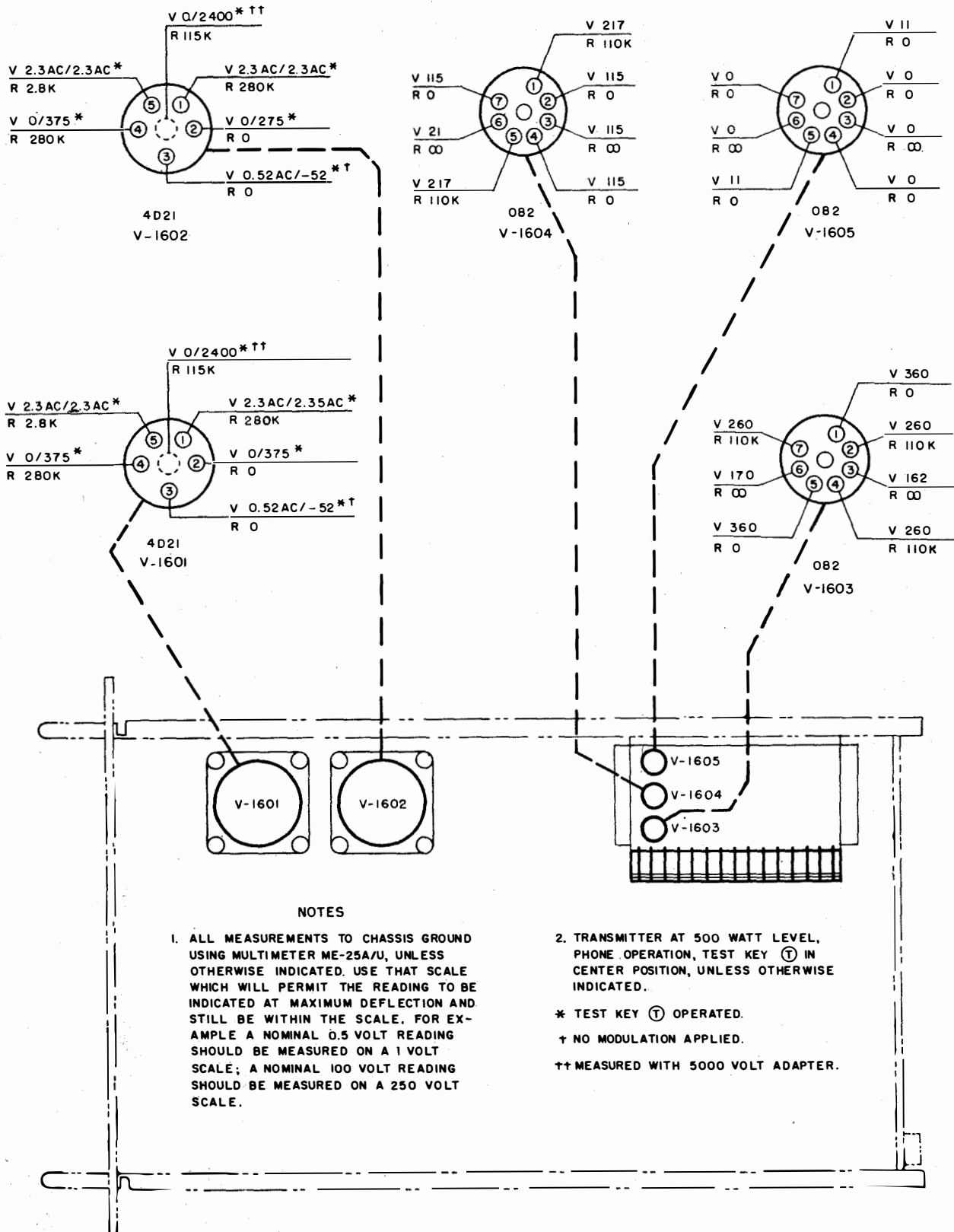


Figure 7-65. Radio Modulator MD-230/SRT (HLRM), Front Panel



NOTES

1. ALL MEASUREMENTS TO CHASSIS GROUND USING MULTIMETER ME-25A/U, UNLESS OTHERWISE INDICATED. USE THAT SCALE WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON A 1 VOLT SCALE; A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON A 250 VOLT SCALE.

2. TRANSMITTER AT 500 WATT LEVEL, PHONE OPERATION, TEST KEY ① IN CENTER POSITION, UNLESS OTHERWISE INDICATED.

* TEST KEY ① OPERATED.

† NO MODULATION APPLIED.

†† MEASURED WITH 5000 VOLT ADAPTER.

Figure 7-66. HLRM Voltage and Resistance Chart

CAUTION

When using the extension test cable, replace the bracket supporting J-1601 and J-1602 to its proper position before replacing the HLRM drawer.

If the air gap between E-1601 and E-1602 (on relay K-1603) is out of adjustment, set it for a 0.030-inch air gap.

WARNING

SHORT BALL GAP ASSEMBLY TO GROUND BEFORE ADJUSTING THE AIR GAP.

8. RADIO FREQUENCY AMPLIFIER AM-1008/SRT (RFA).

a. **TROUBLE SHOOTING.**—When a fault is localized to the RFA, visual indications will aid in locating the faulty circuit. The RFA block diagram is represented in figure 7-67. These indications will vary with the mode of transmission and the power level of the output. Both the **VOLTMETER** and **ANT. CURRENT** meters may be used to check the r-f input and output of the RFA, respectively. **METER SELECTOR** switch (J) should be in the **RF IN (5 V)** position for checking the input to the RFA, with switch (A) to **INT.** and control (Z) clockwise.

The antenna tuning equipment group may be eliminated as a source of trouble, and the transmitter bay operated without radiating an r-f carrier, by connecting **Dummy Load DA-91/U** as described in paragraph 3a.

If there is an r-f input to the RFA but no r-f output, the fault may be in the low level radio modulator

(LLRM) keying circuits (paragraph 6a(2)) as well as in the RFA. The r-f keying voltage from the LLRM can be checked at IPA subassembly terminal board E-1397, terminal 44, located at the top of the RFA drawer. (See figure 7-68.)

With **Multimeter ME-25A/U** (or equivalent) connected between terminal 44 of terminal board E-1397 and chassis ground, the following voltages should appear:

Operate **TEST KEY** (T) with transmitter in stand-by condition and **PHONE** operation; meter should read zero volts; with **TEST KEY** (T) in center position, meter should now read at least -18 volts.

If the LLRM keying circuit is properly producing this voltage, the intermediate power amplifier (IPA) and the power amplifier (PA) stages should be checked by using the **IPA CURRENT** and **PA CURRENT** meters with associated metering selector switches (G) and (H). (See figure 7-73.)

Table 7-35 is a list of typical readings for all modes of transmission and power levels, with transmitter set at a frequency of 6 mc and **TEST KEY** (T) operated with the antenna tuning equipment adjusted for the lowest standing wave ratio (SWR).

WARNING

THE RFA USES VOLTAGES THAT ARE DANGEROUS TO LIFE. EXTREME CAUTION MUST BE EXERCISED WHEN WORKING ON THE RFA.

If the power supply operating voltages (as indicated by **VOLTMETER** readings) are incorrect, check the corresponding power supply.

If the IPA and PA operating voltages are correct, but there is no IPA or PA cathode current, I_k (500

TABLE 7-35. TYPICAL RFA TEST METER READINGS

| METER | METER SELECTOR SWITCH POSITION | | 100-WATT OPERATION | | 500-WATT OPERATION | |
|----------------------------|--------------------------------|----------------------------|--------------------|--------------|--------------------|--------------|
| | | | PHONE | CW, FSK, FAX | PHONE | CW, FSK, FAX |
| VOLT-METER | VOLT-METER (J) | RF IN (5 V) | 2* | 2* | 2* | 2* |
| | | BIAS (500 V) | -200 | -200 | -200 | -200 |
| | | LV (500 V) | 260 | 260 | 280 | 280 |
| | | MV (1000 V) | 430 | 430 | 460 | 470 |
| | | PA E ₂ (1000 V) | 220 | 220 | 390 | 400 |
| PA E _b (5000 V) | 900 | 1100 | 2300 | 2800 | | |
| IPA CURRENT | IPA (G) | I _{c1} (5 ma) | 1 | 1 | 1 | 1 |
| | | I _{c2} (10 ma) | 7.5 | 7.5 | 9 | 9 |
| | | I _k (500 ma) | 60 | 60 | 60 | 60 |
| PA CURRENT | PA (H) | I _{c1} (50 ma) | 18 | 20 | 15 | 12 |
| | | I _{c2} (100 ma) | 68 | 54 | 28 | 16 |
| | | I _k (1 A) | 0.2 | 0.2 | 0.3 | 0.3 |

* Depends upon setting of **EXCITATION** control (Z).

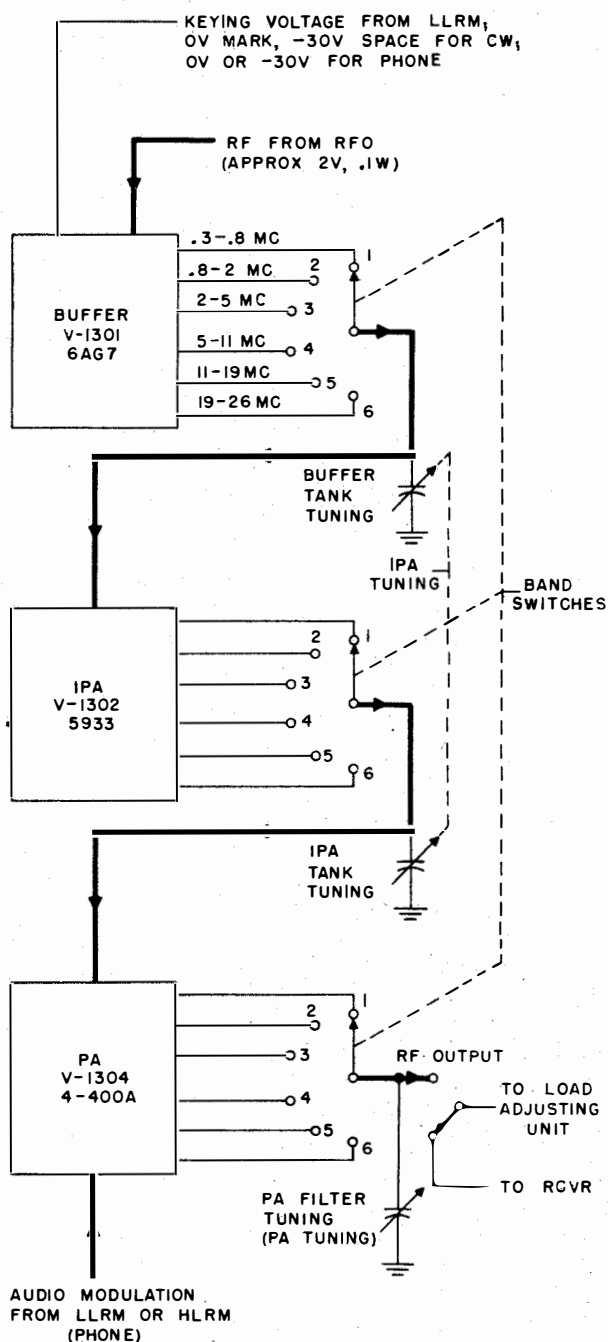


Figure 7-67. Radio Frequency Amplifier
AM-1008/SRT (RFA), Block Diagram

ma) and I_k (1A), check buffer tube V-1301 (figure 7-69) and the LLRM keying circuits as described in paragraph 6a(2).

If the cathode current is absent or low in only one of the stages (IPA or PA), check that stage. If the RFA blower and all of the RFA filaments are not energized, check fuse labeled 3 AMP FILAMENTS AND MOTOR on the RFA front panel.

If an RFA overload occurs, as evidenced by either the PA SCREEN or PA PLATE overload indicator lights going off, check the power amplifier circuit,

using the PA CURRENT meter and switch (H). An RFA overload indication may be caused by an absence of power amplifier plate voltage, or excessive plate or screen dissipation, due to improper setting of the EXCITATION control (Z). (See Section 4.)

If the RFA cannot be tuned, refer to the schematic diagram, figure 7-158, and wiring diagram, figure 7-159, and the voltage and resistance diagram, figure 7-70, to locate the faulty component. When a fault is localized to the RFA control circuits, the control circuits schematics, figures 7-114 and 7-115, may be used to trace through the circuits.

Figures 7-67 through 7-77 show the location of all the components in the RFA.

b. REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—Section 4 contains complete information for the adjustment of the front panel controls. The following paragraphs describe the adjustment of controls not located on the front panel. To make these adjustments, the RFA drawer must be fully extended from the transmitter group cabinet.

WARNING

THE RFA USES VOLTAGES THAT ARE DANGEROUS TO LIFE. EXTREME CAUTION SHOULD BE EXERCISED WHEN TRANSMITTER IS OPERATING WITH RFA DRAWER EXTENDED.

(a) BUFFER AND IPA CIRCUITS.—Four slug-tuned inductors in the buffer circuit, four in the IPA circuit, and a padder capacitor are the electrical adjustments that may be utilized in these circuits. The adjustable inductors for bands 2 to 5 mc, 5 to 11 mc, 11 to 19 mc, and 19 to 26 mc are adjusted from the bottom of the RFA drawer, figure 7-72. Padder capacitor C-1304 is located on the right side of the RFA next to IPA tube socket XV-1302, and is accessible when the IPA compartment protective cover plate is removed. (See figure 7-69.) OPERATE-STANDBY switch (P) is placed in OPERATE for these adjustments.

Note

The four slug-tuned inductors in the buffer and IPA circuits can be adjusted only after replacing a damaged coil, since the adjusting screws for these coils are cut off and glyptal is applied after alignment.

1. 19- TO 26-MC BAND ADJUSTMENTS.—The adjustments for the 19- to 26-mc band are made in the following manner:

Step 1. Set BANDSWITCH selector (C) to the 19-26 MC position.

Step 2. Set up a frequency of 19 mc on RFO front panel knobs.

Step 3. Place switch **(A)** on RFA panel to INT and operate TEST KEY **(T)** on the LLRM front panel.

Step 4. Set capacitor C-1304 (figure 7-69) to its midposition.

Note

This adjustment must be made with care, as L-1344 is located directly above C-1304, and may easily be damaged.

Step 5. Set VOLTMETER switch **(J)** to RF IN (5 V) and adjust EXCITATION control **(Z)** so that VOLTMETER reads at least 2 volts.

Step 6. Set TUNE IPA knob **(B)** for a setting of 10 on IPA dial.

Step 7. Set IPA switch **(G)** to I_{c1} (5 ma) and adjust L-1302 for a maximum reading on IPA CURRENT meter.

Step 8. Set PA switch **(H)** to I_{c1} (50 ma) and adjust L-1307 for a maximum reading on PA CURRENT meter.

Step 9. Set up a frequency of 26 mc on RFO front panel knobs.

Step 10. Retune TUNE IPA control **(B)** for a maximum reading on PA CURRENT meter. (Dial setting should be around 95.)

Step 11. Adjust C-1304 and rock TUNE IPA control **(B)** simultaneously until both give a maximum reading on the PA CURRENT meter.

Step 12. Set up a frequency of 19 mc on RFO panel knobs.

Step 13. Retune TUNE IPA control **(B)** for a maximum reading on PA CURRENT meter.

Step 14. Readjust L-1302 and L-1307 for maximum reading on PA CURRENT meter.

Step 15. Repeat steps 9, 10, and 11.

Step 16. Cut off the protruding portion of the adjusting screw on L-1302 and L-1307, and coat the remaining end with glyptal.

2. 11- TO 19-MC BAND ADJUSTMENTS.—
The adjustments for the 11- to 19-mc band are made in the following manner:

Step 1. Set BANDSWITCH selector **(C)** to the 11-19 MC position.

Step 2. Set up a frequency of 11 mc on RFO front panel knobs.

Step 3. Place switch **(A)** on RFA panel to INT and operate TEST KEY **(T)** on the LLRM panel.

Step 4. Set TUNE IPA knob **(B)** to read 10 on IPA dial, then turn IPA switch **(G)** to I_{c1} (5 ma) and

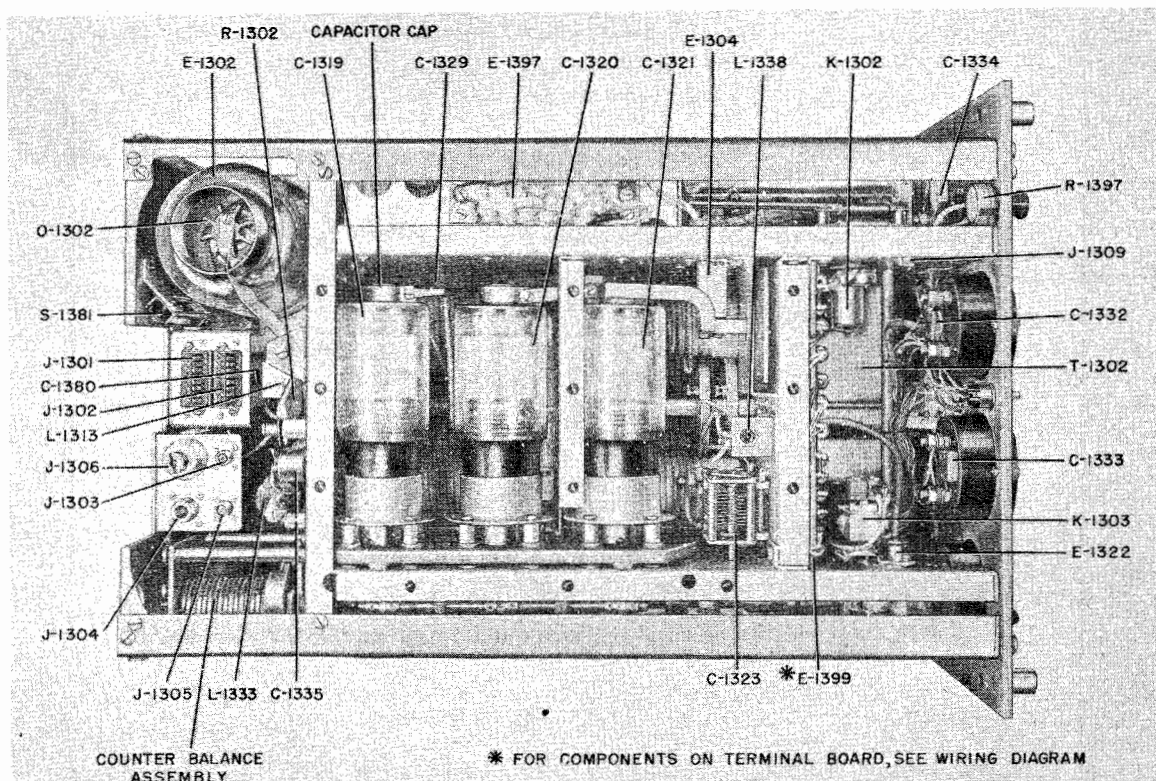


Figure 7-68. Radio Frequency Amplifier AM-1008/SRT (RFA), Top View

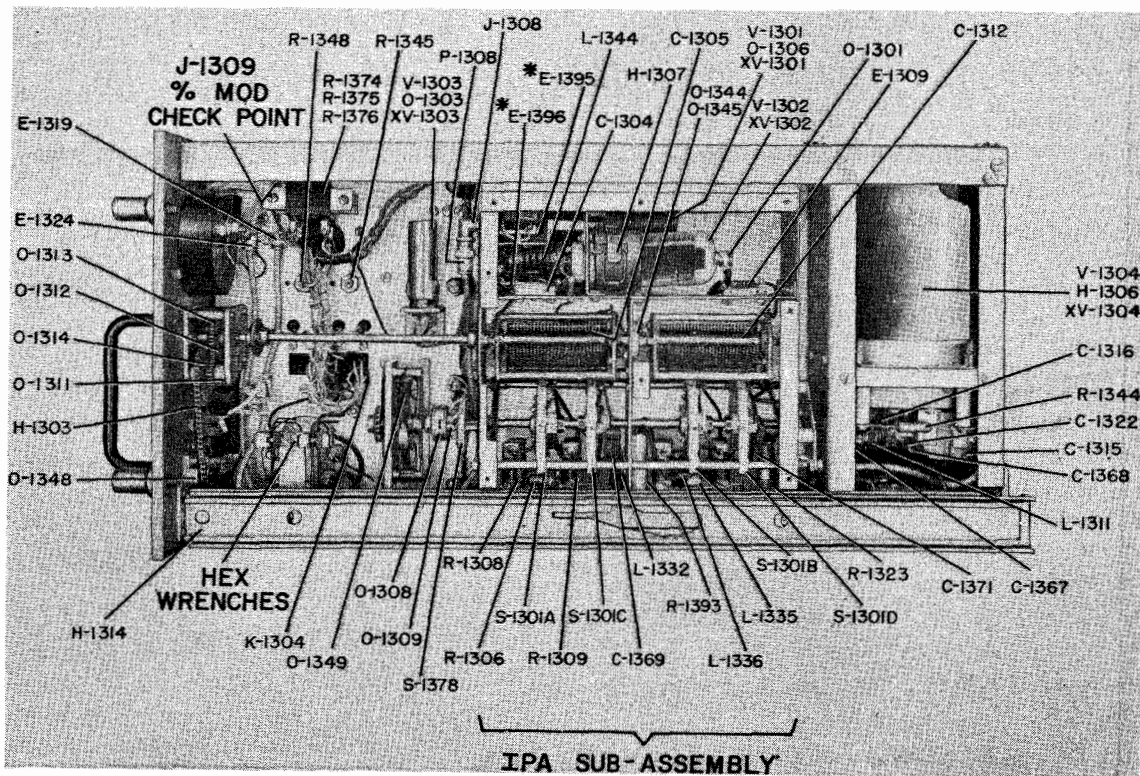


Figure 7-69. Radio Frequency Amplifier AM-1008/SRT (RFA), Right View, Cover Removed from IPA Subassembly

adjust L-1303 for a maximum reading on IPA CURRENT meter.

Step 5. Set PA switch (H) at I_{c1} (50 ma) and adjust L-1308 for a maximum reading on PA CURRENT meter.

Step 6. Set up a frequency of 19 mc on RFO front panel knobs.

Step 7. Rotate TUNE IPA knob (B) for a maximum reading on PA CURRENT meter. This reading should be equal to or greater than the previous one and should occur before minimum capacity, that is, 100 on IPA dial.

Note

If resonance does not occur before 100 on IPA dial, repeat steps 4 and 5, but in step 4, set IPA dial at a lower dial reading.

Step 8. Cut off the protruding portion of the adjusting screw on L-1303 and L-1308, and coat the remaining end with glyptal.

3. 5- TO 11-MC BAND ADJUSTMENTS.—The adjustments for the 5- to 11-mc band are made in the following manner:

Step 1. Turn BANDSWITCH control (C) to the 5-11 MC position.

Step 2. Set up a frequency of 5 mc on the RFO front panel knobs.

Step 3. Set switch (A), on RFA front panel, to INT and operate TEST KEY (T) on the LLRM front panel.

Step 4. Rotate TUNE IPA knob (B) so that IPA dial reads 12. Adjust L-1304 for a maximum reading on the IPA CURRENT meter, with IPA switch (C) set at I_{c1} (5 MA).

Step 5. Adjust L-1309 for a maximum reading on the PA CURRENT meter, with PA switch (H) set at I_{c1} (50 ma).

Step 6. Set up a frequency of 11 mc on the RFO front panel knobs.

Step 7. Rotate TUNE IPA knob (B) for a maximum reading on the IPA CURRENT meter.

Note

Maximum PA CURRENT meter reading should occur before the IPA dial reaches 100. If it does not, repeat steps 2 through 6, but in step 4, set the IPA dial at a lower reading.

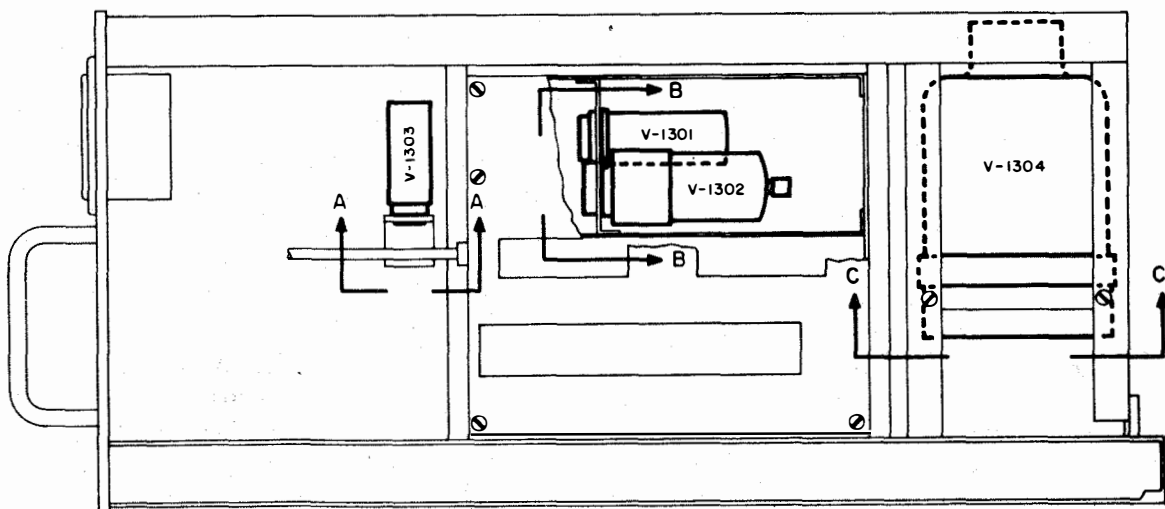
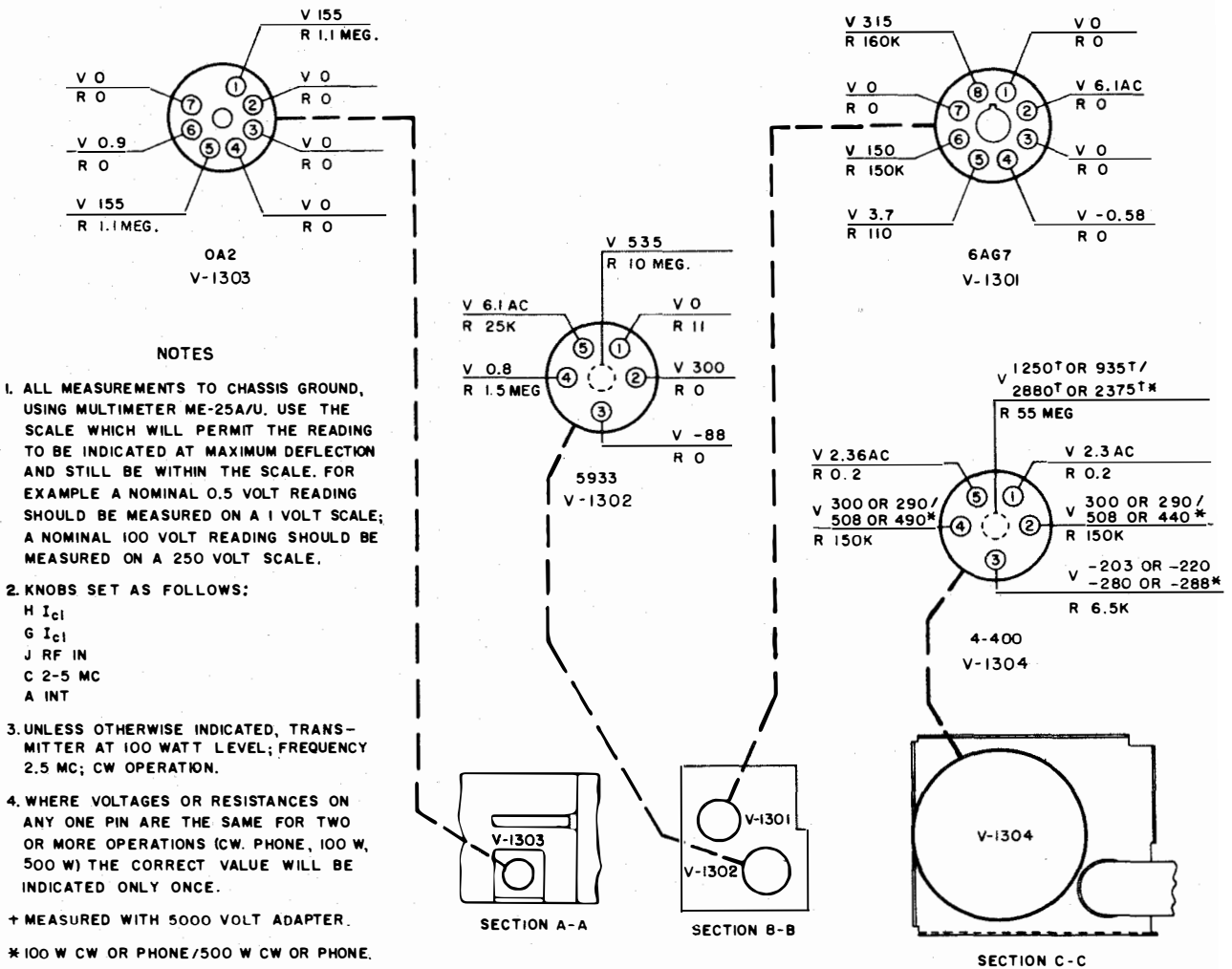


Figure 7-70. RFA Voltage and Resistance Chart

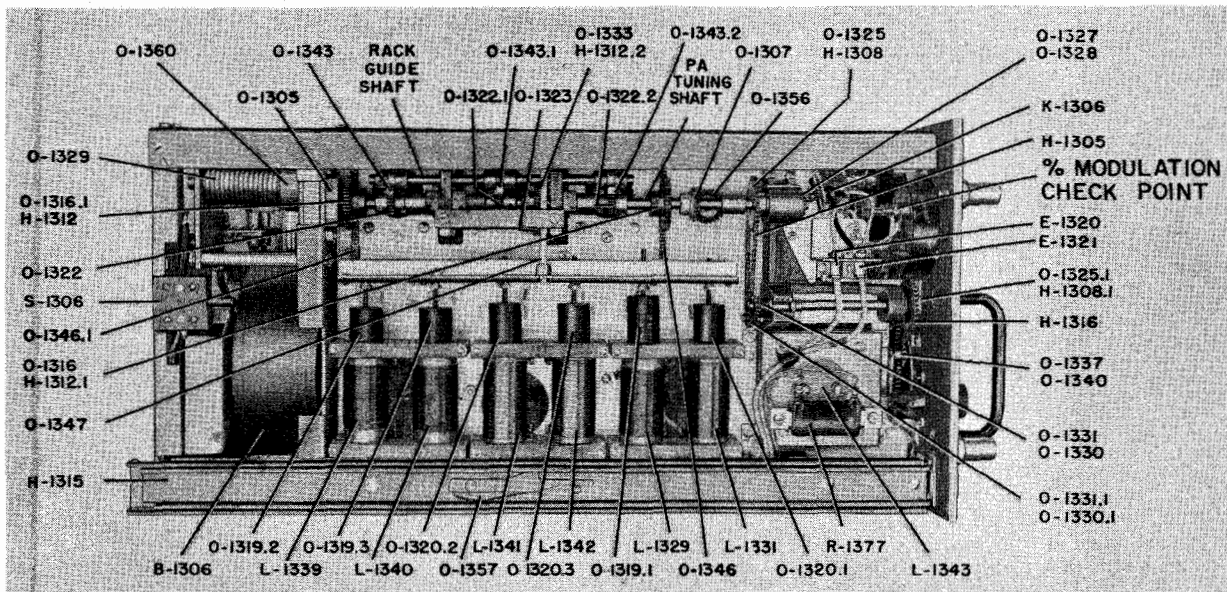


Figure 7-71. Radio Frequency Amplifier AM-1008/SRT (RFA), Left View

Step 8. Cut off the protruding portion of the adjustment screw on L-1304 and L-1309, and coat the remaining end with glyptal.

4. 2- TO 5-MC BAND ADJUSTMENTS.—The adjustments for the 2- to 5-mc band are made in the following manner:

Step 1. Set BANDSWITCH selector (C) to the 2-5 MC position.

Step 2. Set up a frequency of 2 mc on RFO front panel knobs.

Step 3. Place switch (A) on RFA panel to INT and operate TEST KEY (T) on the LLRM front panel.

Step 4. Set TUNE knob (B) to read 2.5 on IPA dial, then set IPA switch (G) to I_{c1} (5 ma) and adjust L-1305 for a maximum reading on IPA CURRENT meter.

Step 5. Set PA switch (H) at I_{c1} (50 ma) and adjust L-1310 for a maximum reading on PA CURRENT meter.

Step 6. Set up a frequency of 5 mc on RFO front panel knobs.

Step 7. Rotate TUNE IPA knob (B) for a maximum reading on the PA CURRENT meter. This reading should occur at the lower end of the IPA dial reading. If it does not, repeat steps 2 through 5, but in step 4 set the dial at a slightly lower reading.

Step 8. Cut off the protruding portion of the adjusting screw on L-1305 and L-1310, and coat the remaining end with glyptal.

5. 0.3- TO 0.8-MC AND 0.8- TO 2-MC BAND ADJUSTMENT.—There are no adjustments in the buffer and IPA circuits for the 0.3- to 0.8-mc and 0.8- to 2-mc bands.

(b) PA CIRCUIT.—All power amplifier circuit adjustments are on the left side of the RFA, figure 7-71, with the exception of L-1337, located on the bottom of the RFA, figure 7-72, and L-1338, on the top, figures 7-68 and 7-74.

1. C-1319, C-1320, C-1321 ADJUSTMENTS.—Vacuum capacitors C-1319, C-1320 and C-1321 (figure 7-68) are adjusted in the following manner:

Step 1. Rotate TUNE PA control (D) clockwise until vacuum capacitors C-1319, C-1320, and C-1321 stop at minimum capacity (minimum engagement of fixed and movable plates).

Step 2. Position the movable plate of each capacitor (C-1319, C-1320, C-1321) so that a 1/16-inch space exists between the fixed and movable plates, as observed through the glass envelope.

Note

C-1319 is adjusted by the hex-head setscrew on the adjusting collar, located approximately two inches to the right of gear O-1322 and rack O-1343, both controlling C-1319 (figure 7-75). The hex-head setscrews on the adjusting collars for the adjustment of C-1320 and C-1321 are located about two inches to the left of the respective gear and rack assembly (O-1322.1, O-1343.1 and O-1322.2, O-1343.2, respectively).

2. R-1345, R-1348 ADJUSTMENT.—Bias adjustments R-1345 (100 watt) and R-1348 (500 watt) (figure 7-69) are adjusted in the following manner:

Step 1. Place the equipment in stand-by condition, OPERATE-STANDBY switch (P) at STANDBY.

Step 2. Connect the d-c probe of Multimeter ME-25A/U (or equivalent) to the junction of L-1311

and R-1344. Place Multimeter ME-25A/U on the 250-volt scale, and set meter function selector to minus (-).

L-1338 (figures 7-68 and 7-74), and L-1337 (figure 7-72), are made in the following manner:

Note

The junction of L-1311 and R-1344 is accessible from the right side of the RFA, at the rear, beneath PA tube socket XV-1304. Connect a clip lead to the left side of resistor R-1344 (located across the two insulators). (See figure 7-69.)

Note

These adjustments are *factory adjustments* and should not be tampered with unless a component has been replaced.

WARNING

EXERCISE CARE AS HIGH VOLTAGES ARE PRESENT.

WARNING

EXTREME CAUTION SHOULD BE EXERCISED WHEN MAKING THESE ADJUSTMENTS AS THEY ARE LOCATED NEAR POINTS OF 1,300-VOLT POTENTIAL.

Step 3. Adjust 100-watt bias control R-1345 for a meter reading of -105 volts. R-1345 is located on the right side of the RFA (figure 7-69).

Step 1. Connect the output of the transmitter to Dummy Load DA-91/U. (See paragraph 3a.)

Step 4. Place 500-watt booster equipment in operation and actuate CARRIER READY 500 W by pushing switch (E) on the RFA front panel. BANDSWITCH must be in position 2-5 MC or higher, and the door covering the RFO frequency selection knobs must be closed.

Step 2. With transmitter set up for 100-watt operation, set RFO knobs for a frequency of 2.5 mc.

Step 5. Adjust 500-watt bias control R-1348 (figure 7-69) for a meter reading of -200 volts.

Step 3. Set BANDSWITCH (C) to the 2-5 MC position.

Step 4. Tune the transmitter for maximum power output as indicated on the ANT CURRENT meter.

Step 5. Turn the carrier on by operating TEST KEY (T) on the LLRM front panel.

Step 6. Place a pick-up loop of wire connected to a receiver near the PA coil in use (receiver RBA, RBB, or RBC series, or equivalent).

Note

Adjustment of R-1348 is not required in the AN/SRT-14.

Note

The pick-up loop should be set to pick up sufficient signal without overloading the receiver.

3. HARMONIC TRAP ADJUSTMENT.—
The three harmonic trap adjustments, C-1323 and

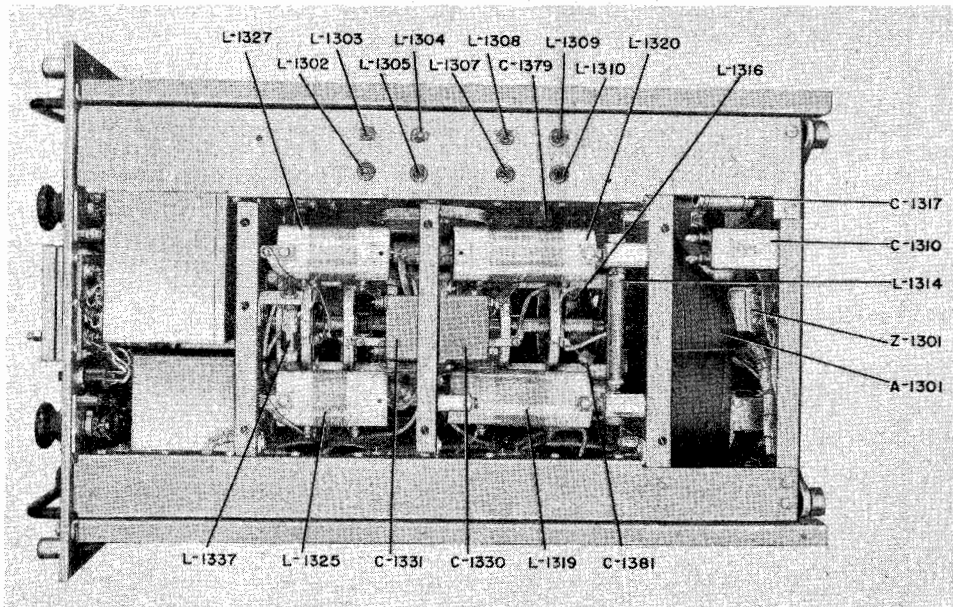


Figure 7-72. Radio Frequency Amplifier AM-1008/SRT (RFA), Bottom View

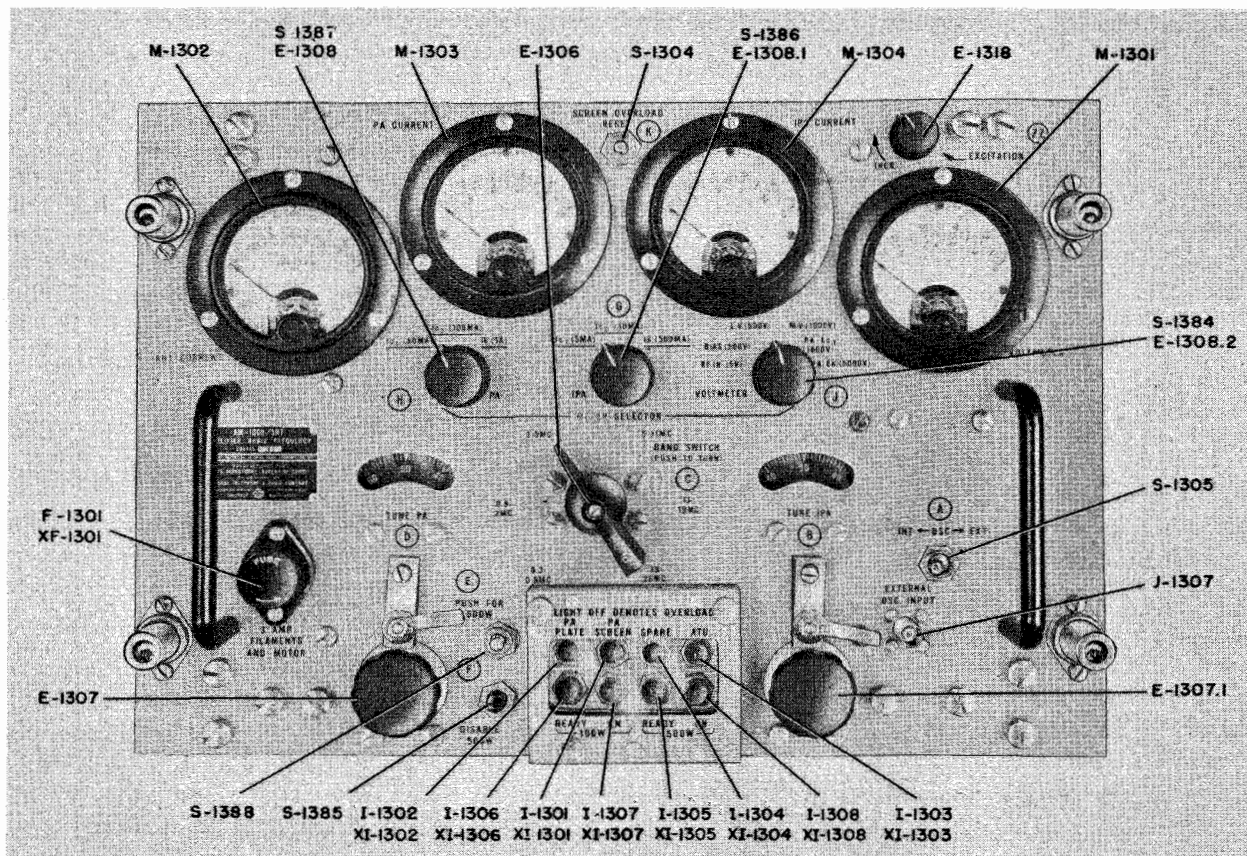


Figure 7-73. Radio Frequency Amplifier AM-1008/SRT (RFA), Front Panel

Step 7. Tune the receiver to the second harmonic (5 mc) of the transmitter output.

Step 8. Adjust L-1337 for minimum receiver output. L-1337 is accessible at the bottom of the RFA by removing the protective cover plate, figure 7-72.

Step 9. Repeat steps 4 through 8, with an RFO frequency of 4.5 mc and a receiver frequency of 9 mc.

Step 10. Loosen setscrews in either bevel gear O-1307 or O-1356. (See figure 7-75.)

Note

Use the hex wrenches mounted on the right side of RFA drawer (figure 7-69).

Step 11. Adjust capacitor C-1323 to provide a minimum receiver output. Tighten setscrews on bevel gears after adjustment has been completed.

Step 12. For a final alignment at this stage, repeat steps for the adjustment of L-1337.

Step 13. With transmitter conditions the same, set up a frequency of 6.0 mc on the RFO front panel.

Step 14. Set BANDSWITCH © to the 5-11 MC position.

Step 15. Tune transmitter for a maximum power output as indicated on the ANT. CURRENT meter.

Step 16. Tune receiver (RBA, RBB, RBC series) to 12.0 mc.

Step 17. Adjust L-1338 for a minimum receiver output. L-1338 is located at the top of the RFA drawer (figures 7-68 and 7-74), and is accessible without removing the protective cover plate.

4. L-1339, L-1340, L-1341, L-1342, L-1329 AND L-1331 ADJUSTMENT.—The iron cores of L-1339, L-1340, L-1341, L-1342, L-1329 and L-1331, figure 7-71, are O-1319.2, O-1319.3, O-1320.2, O-1320.3, O-1319.1, and O-1320.1, respectively (figure 7-71), and are adjusted so that the distance between the core top surface and the actuating plate bottom surface is as follows (positioning is not critical): O-1320.1, O-1320.2 and O-1320.3, 5/8 inch; O-1319.1, 3/8 inch, O-1319.2 and O-1319.3, 3/4 inch.

5. C-1319 COUPLING ADJUSTMENT.—Vacuum capacitor C-1319 (figures 7-68 and 7-75) is adjusted for optimum coupling for all bands in the following manner:

Step 1. Connect the output of the transmitter to Dummy Load DA-91/U. Refer to paragraph 3a.

Step 2. Set up a frequency of 17.2 mc on the RFO front panel, and tune for maximum transmitter output at the 100-watt level.

Step 3. Detune the IPA, if necessary, to obtain PA I_{c1} of 15 ma as indicated on PA CURRENT meter.

Step 4. Rotate TUNE PA knob \odot for a maximum output as indicated on the ANT CURRENT meter.

Note

PA I_{c2} will be maximum at the peak of the r-f output as indicated on the ANT CURRENT meter.

Step 5. While rocking the TUNE PA control \odot for a maximum r-f output, adjust C-1319 using the hex-head setscrew on the adjusting collar, as outlined in paragraph 8b(1)(b)1 to obtain PA I_{c2} of 60 ma. This completes the adjustment. Coupling will now be optimum for all bands.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—To remove the RFA drawer from the transmitter group cabinet, refer to paragraph 4a. Lubrication instructions are given in Section 6.

1. C-1319, C-1320 AND C-1321.—Vacuum capacitors C-1319, C-1320 or C-1321 (figures 7-68, 7-75) may be removed in the following manner:

Step 1. Rotate TUNE PA knob \odot on RFA front panel in a counterclockwise direction to indicate 0 on

the PA dial. Vacuum capacitors should be at maximum capacity at this point.

Step 2. Loosen fasteners on protective plate on top of the RFA drawer, and remove cover.

Step 3. The vacuum capacitors are tuned by means of a rack and pinion arrangement. (See figure 7-75.) Rack assembly O-1343 is connected to the movable plate of the vacuum capacitors by the 1/4-28 threaded screw of the rack assembly. The rack assembly is held in place against the pinion gear O-1322 by the rack guide spacer located on the stationary guide shaft, by means of two adjustable collars. Loosen the two setscrews on one of the collars of the particular capacitor assembly to be removed, and slide collar aside. This will permit the rack guide spacer to be moved and the rack can then be lifted from the pinion gear.

Step 4. Loosen the screw that holds the cap ring onto the capacitor cap (located at opposite end of the vacuum capacitor rack assembly, figure 7-68). Remove cap ring connected to the capacitor.

Step 5. Grasping the capacitor firmly in one hand, remove the four mounting screws that hold the capacitor in place, and carefully lift out the capacitor.

CAUTION

When removing a vacuum capacitor, make sure the rack assembly is clear of the pinion gear. Extreme care should be exercised when removing the capacitor so as not to damage the delicate vacuum extrusion point of the glass envelope.

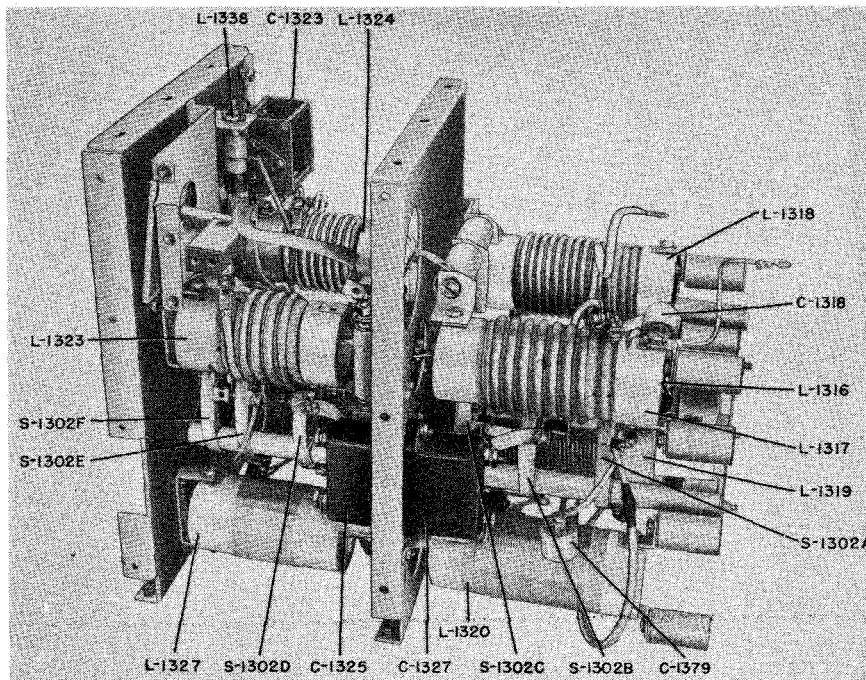
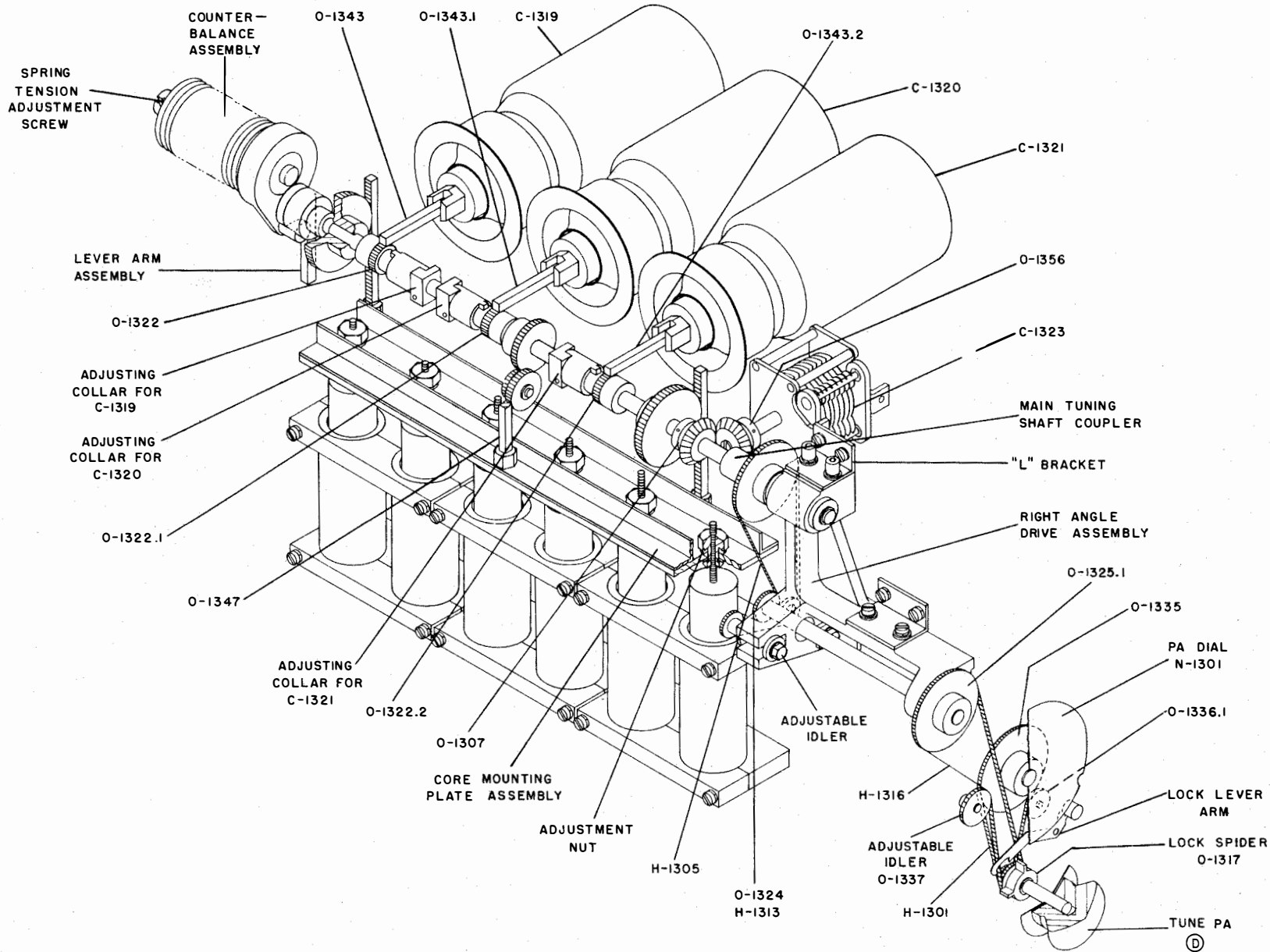


Figure 7-74. RFA, S-1302 Bandswitch Assembly, Left Oblique View



NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A

CORRECTIVE
MAINTENANCE

Figure 7-75. RFA, Power Amplifier (PA), Mechanical Drive System

2. L-1329, L-1331, L-1339, L-1340, L-1341 AND L-1342.—To remove the variable inductors, perform the following steps:

Step 1. With the RFA drawer removed from the transmitter group cabinet, rotate TUNE PA knob ① on the front panel in a clockwise direction to indicate 100 on the dial, figure 7-73. At this point, the variable inductors will be at minimum inductance, and the core mounting assembly plate will be its uppermost position.

Step 2. Remove top cover plate of the RFA chassis by loosening the fasteners.

Step 3. Loosen the adjusting locknuts associated with the core assembly to be removed. Adjust the locknuts so that the iron core will be all the way up against the core mounting plate assembly. At this point, the iron core will be almost completely disengaged from its associated coil form.

Step 4. Remove the screws on the melamine blocks supporting the coil forms.

Step 5. Remove the melamine blocks from the coil forms, and disconnect wires from the standoffs mounted on the rear of the coil supporting blocks.

Step 6. Remove the coil from the RFA drawer, being particularly careful not to damage the iron core. The iron core may also be removed at this time by completely removing the top adjusting nut and lockwasher.

3. IPA DIAL DRIVE ASSEMBLY.

Step 1. Turn TUNE IPA knob ② in a clockwise direction, until it stops. IPA dial should point to 0 on the dial.

Step 2. Plates of variable capacitors C-1305 and C-1312 should be fully meshed. If not, loosen setscrews on shaft coupler O-1321, figure 7-76. Rotate shaft until plates are meshed, and tighten setscrews.

4. PA DIAL DRIVE ASSEMBLY.

Step 1. Rotate TUNE PA dial ① in a clockwise direction until vacuum capacitors C-1319, C-1320 and C-1321 reach minimum capacity (minimum engagement of fixed and movable plates).

Step 2. PA dial should point to 100 on the dial.

The PA dial drive assembly (figure 7-75) is calibrated from 0 to 100 over a 315-degree range. It consists of three sprockets for the chain drive from knob shaft to dial, and from knob shaft to the right-angle drive assembly. An adjustable idler, O-1337, is provided to minimize lash in the dial drive chain. The drive assembly may be removed in the following manner:

Step 3. Remove the screws supporting the front panel of the RFA drawer.

Step 4. Remove the four screws on the front panel supporting the dial drive mounting plate assembly.

Step 5. The dial drive assembly may be removed from the front panel as a unit. (See figure 7-75.) After the dial drive assembly is off the front panel, the sprockets may be removed by removing either the retaining ring or the pin on the shaft associated with the sprocket. The idler assembly may be removed by loosening the two setscrews on the idler arm assembly and removing it from its shaft assembly.

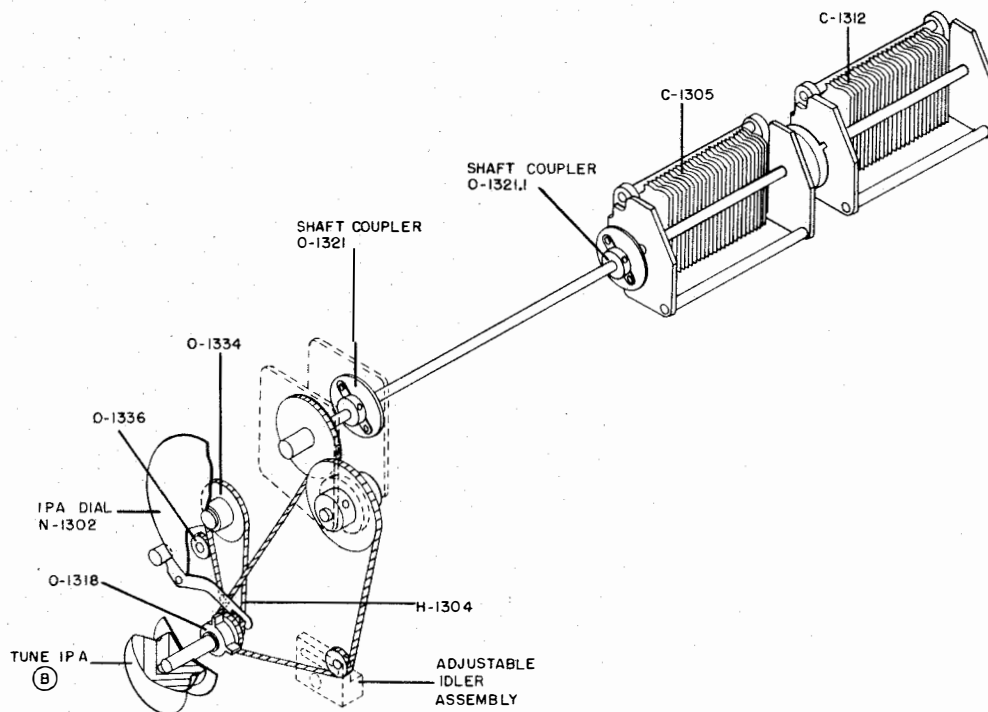


Figure 7-76. RFA, Intermediate Power Amplifier (IPA), Mechanical Drive System

The lock lever assembly spring may be removed by removing the lock lever arm assembly from its shaft.

The dial assembly plate may be removed by first disconnecting chain H-1316 from the dial sprocket, and then removing the sprocket from its shaft. The dial assembly may now be removed from its shaft.

The sprocket has three slotted holes, 120 degrees apart. These permit a 12-degree adjustment of the dial, and may be adjusted in the following manner:

Step 1. Loosen the screws on dial sprocket O-1335.

Step 2. Looking at the rear of the dial drive assembly, place the two indentations in the dial plate facing downward. Set dial plate 0 mark at the top center of assembly by means of slotted holes in sprocket so that the dial indentation on the right is directly above lock spider O-1317.

5. HARMONIC TRAP CAPACITOR C-1323.

—Harmonic trap capacitor C-1323 (figure 7-75) may be removed in the following manner:

Step 1. With the RFA drawer removed from the transmitter group cabinet, rotate TUNE PA knob Ⓢ on the front panel so that the setscrews on bevel gear O-1356 of the capacitor assembly are accessible (figure 7-75).

Step 2. Loosen the setscrews in the bevel gear.

Step 3. Remove screws supporting relay K-1303, mounted on the left panel (figure 7-68). Do not remove wires, but swing relay towards the front panel to gain access to the lower left-hand mounting screw of resistor board E-1399.

Step 4. Remove the five screws supporting resistor board E-1399, and carefully move the resistor board away from its mounting panel to provide accessibility to the mounting screws for harmonic trap capacitor C-1323.

Step 5. Disconnect the lead on harmonic trap capacitor C-1323, and remove the two screws support-

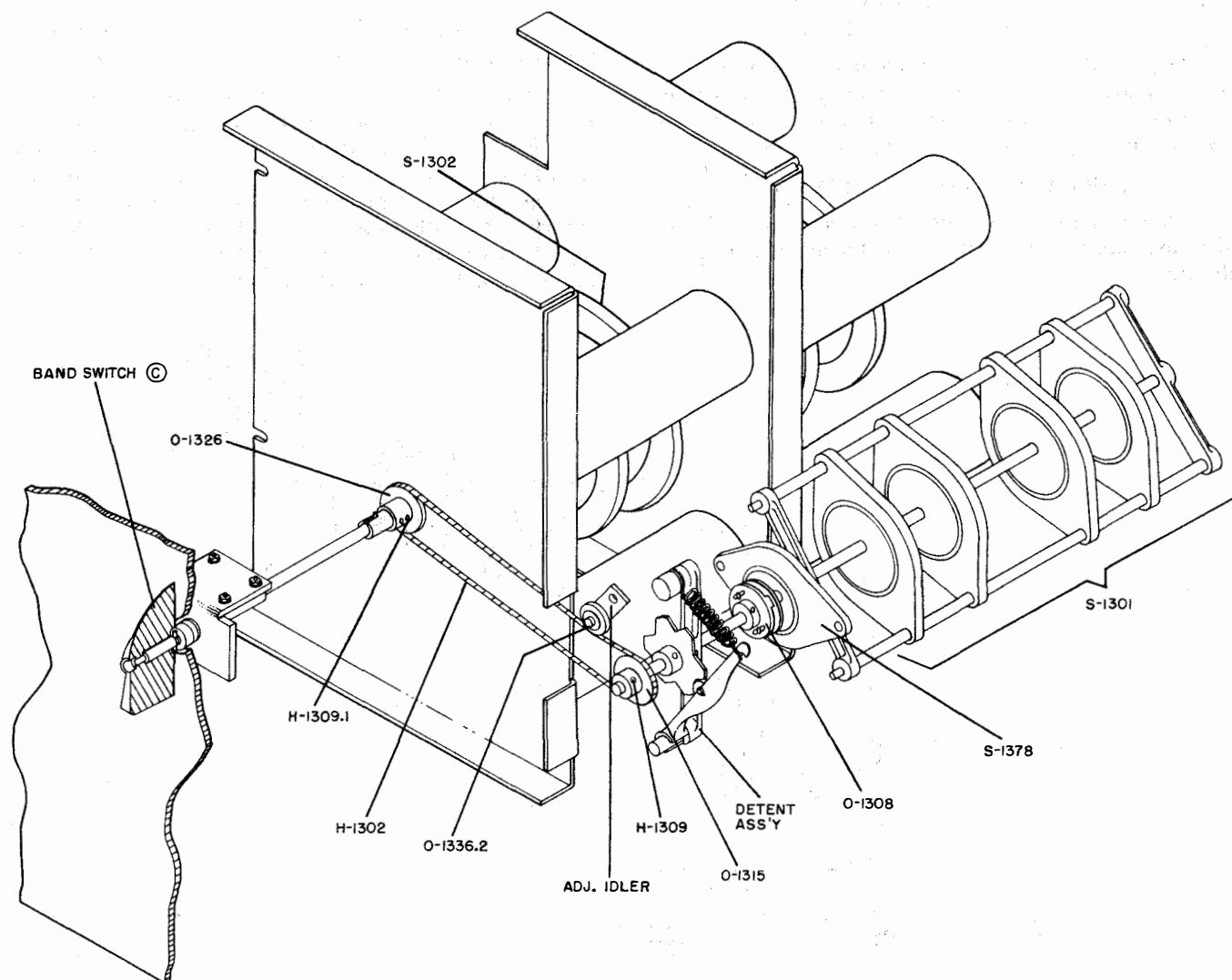


Figure 7-77. RFA, S-1301 and S-1302 Bandswitch, Mechanical Drive System

ing the capacitor. Hold bevel gear in one hand, and, with the other hand, withdraw the capacitor from the chassis.

6. PA TUNING COUNTERBALANCE ASSEMBLY.—The spring-loaded nonlinear counterbalance assembly, figures 7-68 and 7-75, mounted at the top left rear section of the RFA chassis, is provided to overcome frictional losses in the main PA tuning drive assembly. This main assembly drive tunes the harmonic trap capacitor, the vacuum capacitors, and the variable inductors. A variation in spring tension may be obtained by positioning the 10-32 screw at the rear mounting plate of the counterbalance assembly. A hole is provided in the shaft, extending through the center of the rear counterbalance mounting plate, so that a screwdriver may be inserted, and the shaft prevented from rotating whenever an increase or decrease in spring tension is necessary. (See figure 7-75.)

CAUTION

Whenever the counterbalance assembly is disassembled, the rear adjustment screw *must* be removed, in order to release the spring tension in the counterbalance assembly.

Step 1. Remove top cover plate of the RFA chassis by loosening the fasteners. Remove the support angle (the upper left edge of the RFA drawer) by removing three screws from the top, three from the left side, and two from the front panel.

Step 2. Remove spring tension from counterbalance assembly by removing the rear adjustment screw.

Step 3. By means of an offset screwdriver, remove the four screws supporting the counterbalance rear plate assembly.

Step 4. Withdraw the counterbalance assembly from the RFA chassis. The lever arm assembly, pinned to the shaft, will remain on the main drive shaft and also the four counterbalance assembly spacers mounted on the inner rear panel of the RFA chassis.

7. RIGHT ANGLE DRIVE ASSEMBLY.—The right angle drive assembly (figure 7-75) provides a means of tuning from one main control, TUNE PA knob (D) on the front panel, the vacuum capacitors, variable inductors and the harmonic trap capacitor.

It consists of an aluminum casting, right angle bracket with shafts, sprockets and a chain provided with an adjustable idler to minimize lash. The arrangement of the chain is such that it provides a means of reversing the direction of rotation from the TUNE PA (D) dial drive assembly to the main drive tuning shaft assembly. The right-angle drive assembly may be removed in the following manner:

Step 1. Remove top cover plate of the RFA chassis by loosening the fasteners. Remove the support angle (the upper left edge of the RFA drawer) by removing three screws from the top, three from the left side, and two from the front panel.

Step 2. Disconnect chain H-1316 from right angle drive assembly to the PA dial drive assembly, by loosening adjustable idler O-1337.

Step 3. Loosen the 4-40 setscrew, and remove the pin on the shaft coupler connected to the main tuning shaft (figure 7-75).

Step 4. Remove the two hex head screws on the "L" bracket at the top of the right-angle casting and the five mounting screws supporting the right-angle casting to the chassis.

Step 5. Rotate right angle drive assembly 90 degrees to the left, and pull assembly towards the front panel until it is disconnected from the main tuning drive shaft. To remove chain H-1305 and sprocket, loosen the setscrews and remove the pins. A sprocket may be removed with its shaft by removing the shaft retaining ring at the opposite end of the sprocket shaft.

The main PA tuning drive shaft consists of the following mechanical components mounted on the vacuum capacitor tuning base (figure 7-75). Three drive shafts are coupled by means of drive couplers to form a single shaft connecting the right angle drive assembly to the counterbalance assembly.

The upper shaft supports the vacuum capacitor rack guide spacers and collars. This guide shaft (figure 7-71) is fixed and locked in place by two setscrews.

The lower shaft supports the gear and pinion assembly to drive rack O-1347 in the center of the core mounting plate assembly. This shaft is also fixed and locked by two setscrews. Gears and sprockets are fastened on their respective shafts by means of setscrews and pins. There is a provision on the main tuning shaft to adjust the travel of the vacuum capacitors by means of adjustable collars. (Refer to paragraph 8b(1)(b)1.)

8. BANDSWITCHES S-1301 AND S-1302. (See figures 7-74 and 7-77.)—If any of the components of bandswitches S-1301 and S-1302 are replaced, it will be necessary to check proper phasing of these switches after reassembly. (Refer to figure 7-77.)

Phasing of bandswitches may be accomplished as follows:

Step 1. Turn BANDSWITCH selector (C) on RFA front panel to the 2-5 MC position. Make sure that the PUSH TO TURN feature is fully released. Contactor arms of switch S-1302 should be centered on No. 3 contact of switch, as observed from the bottom of the RFA drawer.

Step 2. At this point, the detent assembly (on right side of the RFA drawer) should be fully engaged in one of the detent positions. Contactor arms of switch S-1301 should be centered on No. 3 contact of switch, as observed from the right side of the RFA drawer. Remove IPA assembly cover plate if necessary.

Step 3. If S-1301 contactor arm is not on position 3, loosen the setscrews in coupler O-1308, rotate switch S-1301 to position 3 and tighten setscrews in O-1308. Adjustable idler on chain H-1302 should be set to minimize backlash.

NOTES

1. TRANSMITTER OPERATED AT 100 WATT LEVEL, CW OPERATION.
2. ALL METER READINGS PLUS D-C, UNLESS OTHERWISE INDICATED. USE THAT METER SCALE WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE, A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON A 1 VOLT SCALE; A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON A 250 VOLT SCALE.

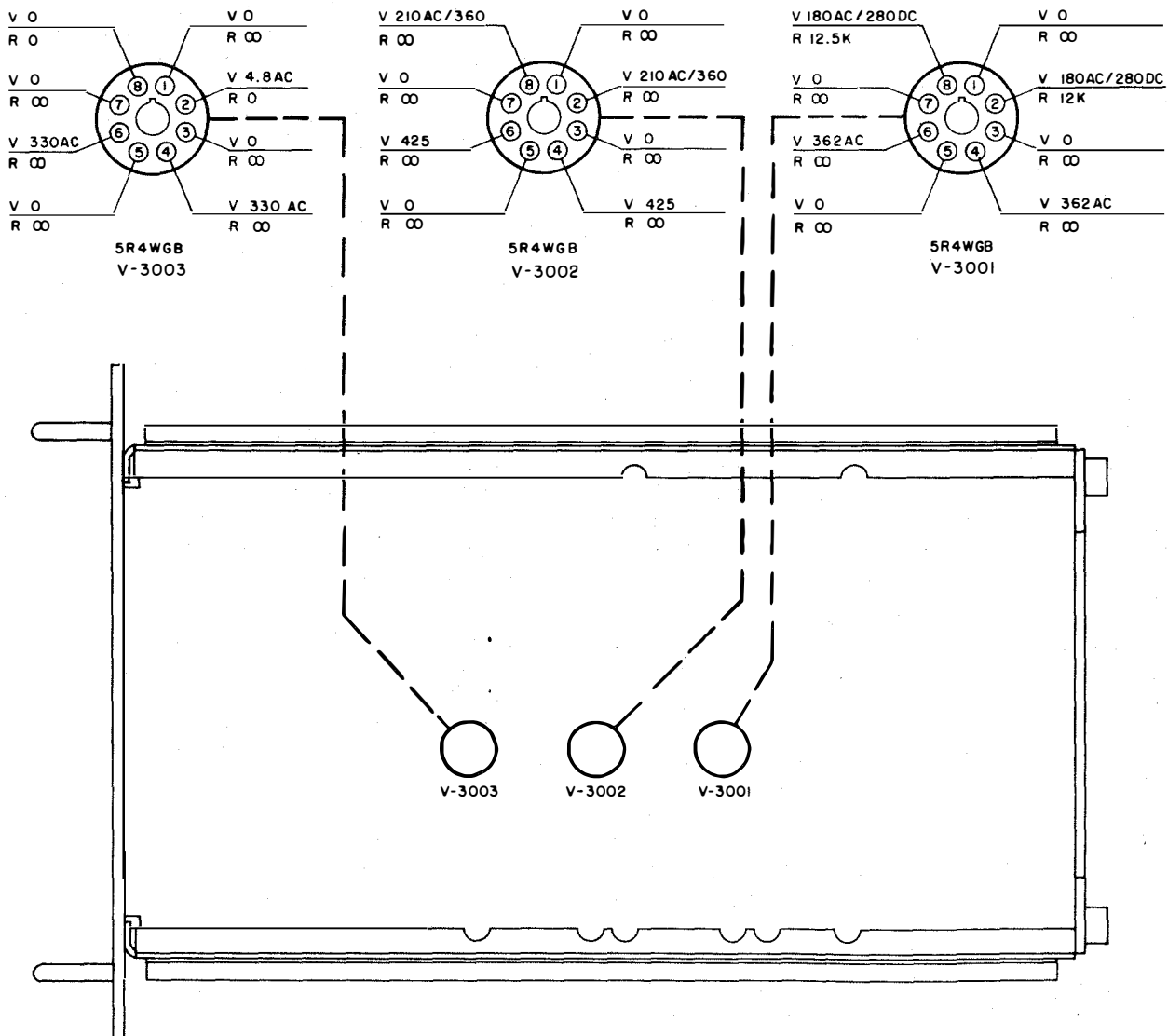


Figure 7-78. LVPS, Voltage and Resistance Chart

9. BLOWER MOTOR B-1306.—Remove the RFA blower, figure 7-71, according to the following steps:

Step 1. With RFA drawer removed from the transmitter group cabinet, remove screws supporting rear panel on RFA drawer. Exercise care to remove only the screws supporting this panel.

Step 2. Remove screw supporting L-1313. (See figure 7-68.)

Step 3. Remove the four screws supporting blower motor brackets on RFA rear panel.

Step 4. Remove flexible hose A-1301 between XV-1304 assembly and blower housing (figure 7-72).

Step 5. Carefully remove blower assembly B-1306 from bottom of the RFA drawer.

10. IPA SUBASSEMBLY.—When a component in the IPA subassembly is to be replaced, and the component is inaccessible from the right side of the RFA drawer, remove the IPA subassembly as follows (see figure 7-69):

Step 1. With RFA drawer removed from the transmitter group cabinet, remove the IPA subassembly protective cover.

Step 2. Remove the support angle (the upper right edge of the RFA drawer) by removing two screws on the front panel, four from the top and four from the right side.

Step 3. Loosen setscrews on IPA shaft couplers, O-1321 and O-1321.1, and remove shaft between couplers (figure 7-76).

Step 4. Rotate BANDSWITCH selector © to the 2-5 MC position. At this position the red dots on coupler O-1308 will be facing outwards (figure 7-77).

Step 5. Disconnect wire on the right side of the IPA subassembly, and disconnect P-1308 from J-1308 on left side of IPA subassembly (figure 7-69).

Step 6. Remove all screws supporting IPA subassembly to main chassis.

Step 7. If IPA subassembly is to be removed entirely from RFA drawer, wires on both switch S-1378 (figure 7-69) and terminal board E-1397 (figure 7-68) will have to be disconnected.

(b) REPLACEMENT AND ADJUSTMENTS.—To replace the RFA drawer, reverse the removal procedure.

To replace any of the components in the RFA drawer, reverse the removal procedure, and adjust according to the procedures outlined in paragraph 8b(1).

See Section 6 for lubrication instructions.

9. POWER SUPPLY PP-1094/SRT, LOW VOLTAGE POWER SUPPLY (LVPS).

a. TROUBLE LOCATION.—The LVPS receives input power from the ship's supply, and supplies power

to all the other units in the transmitter group except for the crystal oven circuits, which are supplied from a separate 110-volt a-c source. Table 7-36 lists the indications of LVPS failure and the probable faults. Use the voltage and resistance chart, figure 7-78, in conjunction with the schematic, figure 7-160, and wiring diagram, figure 7-161, to locate the fault.

b. REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—There are no electrical adjustments on the low voltage power supply, except the time delay adjustment of relay K-3003, which should be adjusted for a 33-second time delay. The adjustable cams of relay K-3003 can be adjusted for a time delay of 18 to 46 seconds.

The following voltage checks may be made on the LVPS front panel, permitting power supply output measurements, by means of Multimeter ME-25A/U (or equivalent).

WARNING

DANGEROUS VOLTAGES ARE PRESENT.

(a) Bias voltage supply of -220 volts may be checked on the radio frequency amplifier (RFA) front panel with VOLTMETER switch ④ in position BIAS (500V). If there is no reading on the VOLTMETER, use Multimeter ME-25A/U (or equivalent) to check for proper voltage at test point -220 V on front panel of LVPS. If no voltage is present, refer to trouble location chart, table 7-36, to locate the fault.

(b) The +300-volt supply may be checked on the RFA with VOLTMETER switch ④ in position LV (500 V). If there is no reading on the meter, use Multimeter ME-25A/U (or equivalent), and check for proper voltage at test point +300 V on front panel of LVPS. If voltage is present at LVPS test point, but not at the RFA VOLTMETER, check interconnecting cable between the units. If no voltage is present, refer to trouble location chart, table 7-36, to locate the fault.

(c) The +250 unregulated voltage, supplied to the RFO, may be checked at test point +250 V on front panel of LVPS. If voltage is present at the test point in the LVPS, but not at test point 250 V. D.C. UNREG. at TEST POINTS socket E-2919 on the radio frequency oscillator (RFO) left side, check interconnecting cable and associated connecting plugs of the transmitter frame. Refer to trouble location chart, table 7-36, to locate the fault.

(d) Refer to the primary power distribution diagrams, figures 7-117 and 7-118, for proper terminals and relay contacts supplying power to cabinet heaters and blower motors in the transmitter bay.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—The low voltage power supply drawer may be removed according to the instructions given in paragraph 4a. All components on the LVPS (figures 7-79, 7-80, and 7-81)

TABLE 7-36. INDICATIONS OF FAILURE AND PROBABLE FAULTS IN THE LVPS

| INDICATION OF FAILURE | PROBABLE FAULT |
|---|---|
| CABINET HEATER indicator light does not light when CABINET HEATER switch (M) is turned on (with EMERGENCY SWITCH (N) ON). | Fuses F-3001, F-3002, or cabinet heater switch S-3002. |
| MAIN POWER INDICATOR light goes on when START push button is depressed, and goes off when it is released. | Relay K-3001. |
| Nothing happens when START push button is depressed. | Fuses F-3007, F-3008. |
| Blowers in mounting do not operate after time delay relay K-3003 is energized. | Relay K-3004, or fuses F-3005, F-3006. |
| TIME DELAY indicator light does not light approximately 30 seconds after START push button is depressed. | -24-volt supply (relay line), interlocks, fuses F-3005, F-3006, F-3007, F-3008, F-3009, F-3010, or time delay relay K-3003. Check that all drawers in transmitter bay are properly seated. (If unit drawer is extended, check that its interlock is properly checked.) With transmitter power off, the interlock circuit continuity may be checked at the INT. TEST jacks on LVPS front panel. |
| -220 V, 250 V and 300 V indicator lights do not light. | If any one of these lamps is not on, check respective power supply. If TIME DELAY indicator light does not light, check fuse F-3009. If TIME DELAY indicator light is on, check relay K-3004. Note The outputs of the -220-, +250- and +300-volt supplies can be checked at the test points provided on the LVPS front panel. The output of the +300-volt supply can be checked with VOLTMETER selector switch (J) on RFA front panel in the LV (500 V) position. The output of the -220-volt bias supply can be checked with VOLTMETER selector switch (J) on the RFA front panel in the BIAS (500 V) position. If any output is incorrect, check rectifier and filter for that supply. |

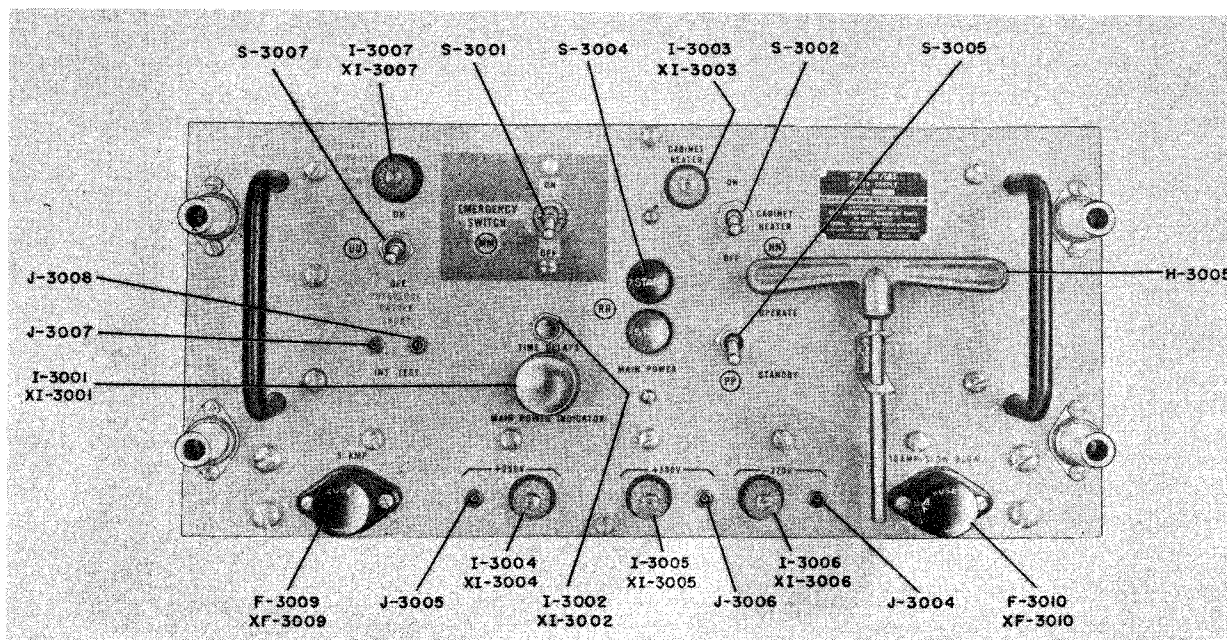


Figure 7-79. Power Supply PP-1094/SRT (LVPS), Front Panel

TABLE 7-37. INDICATIONS OF FAILURE AND PROBABLE FAULTS IN THE MVPS

| INDICATION OF FAILURE | PROBABLE FAULT |
|---|--|
| 500 V PRI. or 1300 V PRI. indicator lights do not light during 100-watt operation. | Relay K-501 and K-503 and its control circuit. Fuse F-502 or F-501. |
| 500 V PRI. indicator light does not light in 500-watt operation. | Relay K-501 or fuse F-501. |
| 500 V PRI. and 1300 V PRI. indicator lights go on but 500 V OUTPUT and 1300 V OUTPUT indicator lights do not. | Filament circuit protected by fuse F-503. |
| 500 V PRI. and 500 V OUTPUT indicator lights do not light. | Fuse F-501. |
| 500 V PRI. indicator light goes on but 500 V OUTPUT indicator light does not. | +500-volt rectifier and filter circuit (V-501 and V-502). Note The output of the +500-volt supply can be checked at the test point 500 V OUTPUT on the MVPS front panel, and also on the RFA front panel with VOLTMETER switch ④ in the MV (1000 V) position. |
| 1300 V PRI. and 1300 V OUTPUT indicator lights do not light. | Fuse F-502 and relay K-503. |
| 1300 V PRI. indicator light goes on, but 1300 V OUTPUT indicator light does not. | +1300-volt rectifier and filter circuit (V-503 and V-504). Note The output of the +1300-volt supply can be checked on the RFA front panel with VOLTMETER switch ④ in the PA E _b (5000 V) position. |
| Keying transients present in RFA output waveform during CW operation. | Dumping circuit in the low level radio modulator, LLRM. See paragraph 6a(2). |

are readily accessible, and may be replaced by removing their respective mounting bolts. Plug-in type filter capacitors are secured by means of clamp plates and wing nuts.

(b) REPLACEMENTS.—Refer to paragraph 4b to replace the LVPS drawer.

10. POWER SUPPLY PP-1095/SRT, MEDIUM VOLTAGE POWER SUPPLY (MVPS).

(See figures 7-82, 7-83 and 7-84.)

a. TROUBLE LOCATION.—Table 7-37 lists indications of failure and probable faults in the medium voltage power supply (MVPS). The voltage and resistance chart, figure 7-85, in conjunction with the schematic, figure 7-162, and wiring diagram, figure 7-163, may be used to locate the faulty component.

WARNING

THE MVPS USES HIGH VOLTAGES THAT ARE DANGEROUS TO LIFE. EXTREME CAUTION SHOULD BE EXERCISED WHEN WORKING ON THE MVPS.

b. REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—There are no electrical adjustments on the medium voltage power supply.

ORIGINAL

Table 7-38 lists MVPS voltages to be checked by means of the VOLTMETER on the radio frequency amplifier (RFA) front panel for both 100- and 500-watt operation.

TABLE 7-38. MVPS VOLTAGES MEASURED AT THE RFA VOLTMETER

| POSITION OF KNOB ④ (RFA) | 100-WATT OPERATION (VOLTS) | 500-WATT OPERATION (VOLTS) |
|-----------------------------|----------------------------|----------------------------|
| MV (1000 V) | 500 | 500 |
| PA E _{c2} (1000 V) | 300 | 500 |
| PA E _b (5000 V) | 1300 | 3000 |
| PA E _b (5000 V) | 1050 | 2400 |
| (Knob ④ on LLRM to PHONE) | | |

WARNING

THE MVPS USES HIGH VOLTAGES THAT ARE DANGEROUS TO LIFE. EXTREME CAUTION SHOULD BE EXERCISED WHEN WORKING ON THE MVPS.

(a) The +500-volt supply may be checked on the RFA front panel by means of the VOLTMETER and associated selector switch ④ in the MV (1000 V)

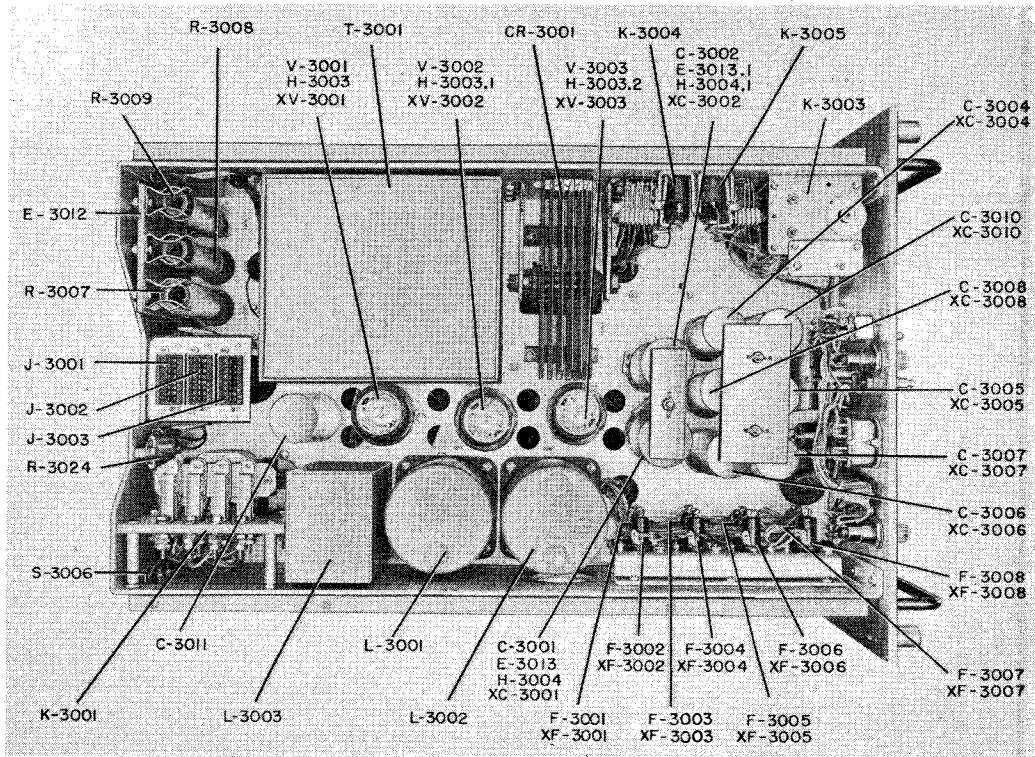


Figure 7-80. Power Supply PP-1094/SRT (LVPS), Top View

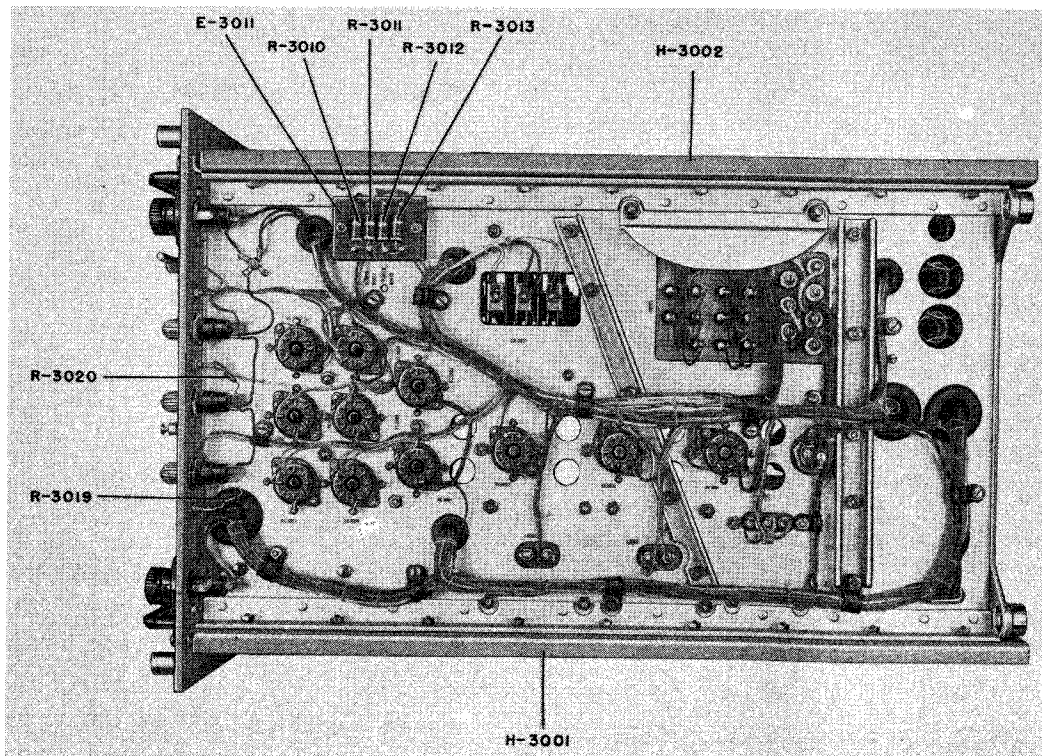


Figure 7-81. Power Supply PP-1094/SRT (LVPS), Bottom View

TABLE 7-39. INDICATIONS OF FAILURE AND PROBABLE FAULTS IN THE HVPS

| INDICATION OF FAILURE | PROBABLE FAULT |
|---|---|
| TIME DELAY indicator light does not light 30 seconds after BOOSTER EMERGENCY SWITCH $\text{\textcircled{S}}$ is turned on. | Fuses F-1504, F-1505, or time delay relay K-1504. |
| HV PRIMARY $\phi 1$, $\phi 2$ and $\phi 3$ indicator lights do not light when all 500-watt operation conditions have been met. | Input circuit: relay K-1502, fuses F-1501, F-1502 and F-1503. |
| One of the HV PRIMARY indicator lights does not light, and the other two light dimly. | Open line in circuit in which unlit indicator light is connected. If HV PRIMARY $\phi 1$ is not lit, check F-1501; $\phi 2$, F-1502; and $\phi 3$, F-1503. |
| HV PRIMARY indicator lights go on but 3000 V indicator light in HLRM does not. | +2400/+3000-volt rectifier circuit (V-1501 through V-1506). Note The output of the +2400/+3000-volt supply can be checked by the VOLT-METER in the RFA, with VOLTMETER switch $\text{\textcircled{J}}$ in the PA E _b (5000 V) position during 500-watt operation. |

position for both 100-watt and 500-watt operation (table 7-38). When there is no reading at both the MV (1000 V) and PA E_{c2} (1000 V) positions on the RFA VOLTMETER, check the +500-volt output by means of Multimeter ME-25A/U (or equivalent). A test point has been provided on the front panel of the MVPS, labeled 500 V OUTPUT, for the purpose of checking the +500-volt output of the MVPS. If there is voltage present at the test point on the MVPS front panel, but no indication on the RFA VOLTMETER, check the continuity of the interconnecting cable in the transmitter frame. If the interconnecting plug and cable are found to be good, refer to the trouble location chart, table 7-37, to locate the fault.

(b) The +1,050/+1,300-volt supply may be checked by means of the VOLTMETER on the RFA front panel with associated selector switch $\text{\textcircled{J}}$ in position PA E_b (5000 V). Do not check these high potentials by means of an external voltmeter. If there is high voltage in the MVPS as indicated by the 1300 V OUTPUT lamp, and no indication of high voltage output on the RFA voltmeter, turn off all power supplies, and make a continuity check of the high voltage interconnecting cable. If the high voltage interconnecting cable is found to be good, refer to the trouble location chart, table 7-37, to locate the fault.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—The medium voltage power supply drawer may be removed from the transmitter bay by following the procedure in paragraph 4a.

All components and fuses are readily accessible when the MVPS drawer has been pulled all the way out (figure 7-83).

(b) REPLACEMENT.—Refer to paragraph 4b to replace the MVPS drawer.

11. POWER SUPPLY PP-1096/SRT, HIGH VOLTAGE POWER SUPPLY (HVPS).

a. TROUBLE LOCATION.—Table 7-39 lists indications of failure and probable faults in the HVPS. The voltage and resistance chart, figure 7-86, in conjunction with the schematic, figure 7-164, and wiring diagram, figure 7-165, may be used to locate the faulty component.

WARNING

THE HVPS USES HIGH VOLTAGES THAT ARE DANGEROUS TO LIFE. EXTREME CARE SHOULD BE EXERCISED WHEN WORKING ON THE HVPS.

b. REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—All links on E-1503 and E-1504 must be properly set for the ship's supply. (See Section 3, figure 3-13.)

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—The HVPS is removed from its cabinet in the same manner as the other drawers, as indicated in paragraph 4a. Figures 7-87 and 7-88 show the location of components in the HVPS.

(b) REPLACEMENT.—To replace the HVPS drawer, reverse the removal procedure as indicated in paragraph 4b.

12. MOUNTING MT-1423/SRT (BASE MOUNT)

a. TROUBLE LOCATION.—If the blowers do not rotate when the START push button of MAIN POWER switch $\text{\textcircled{R}}$ is depressed, and time delay relay K-3003 has energized, check the -24-volt supply, relay K-3004 and fuses F-3007, F-3008. See table 7-36 and power distribution diagram, figure 7-117.

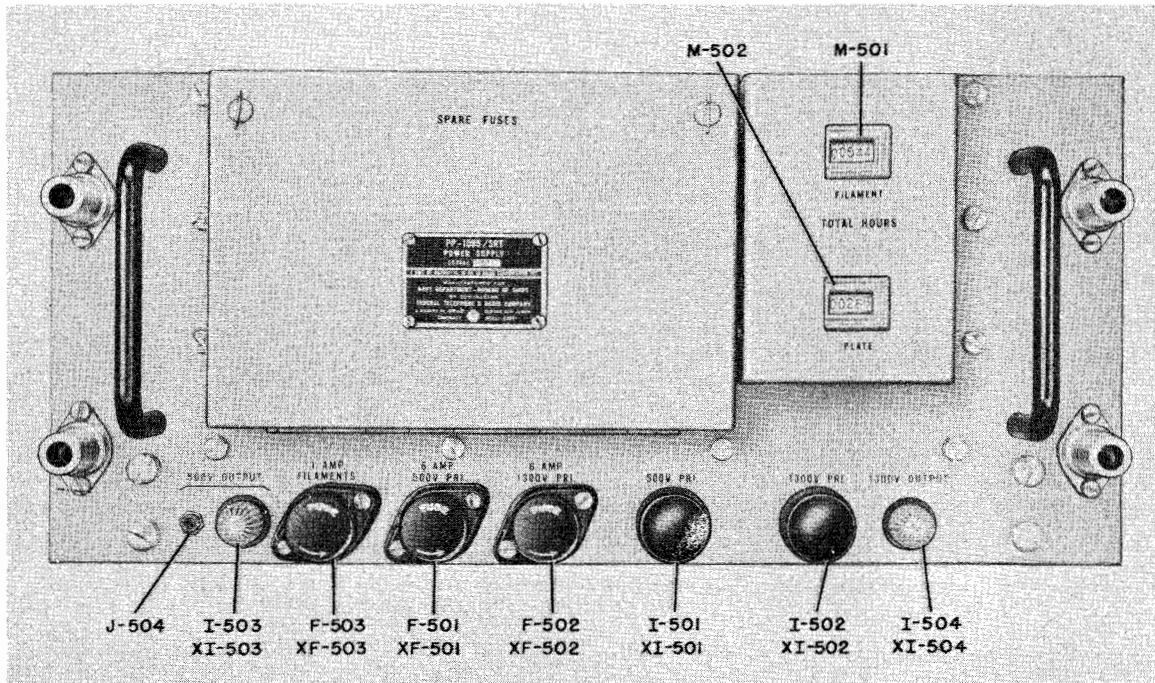


Figure 7-82. Power Supply PP-1095/SRT (MVPS), Front Panel

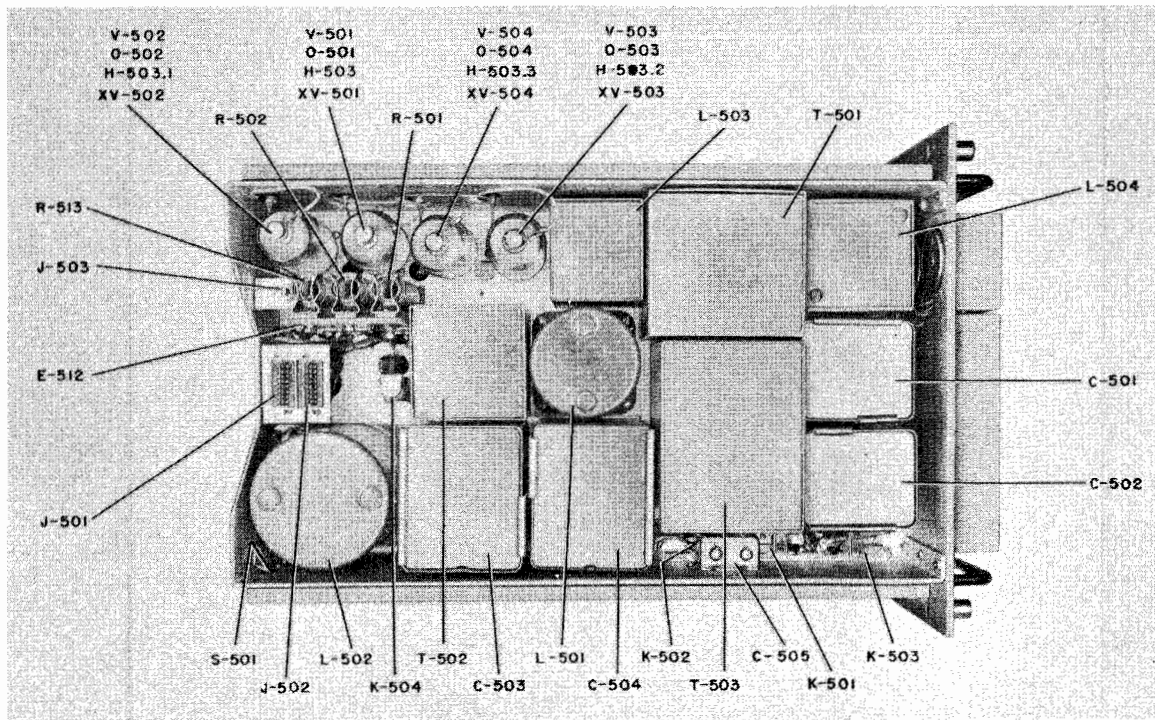


Figure 7-83. Power Supply PP-1095/SRT (MVPS), Top View

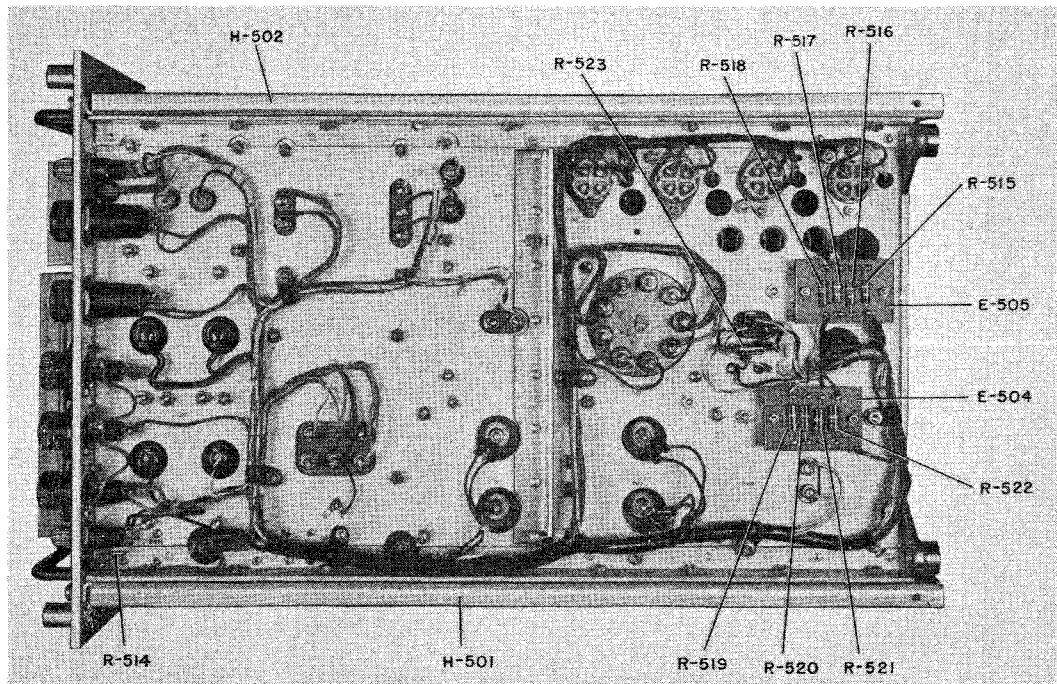


Figure 7-84. Power Supply PP-1095/SRT (MVPS), Bottom View

Note

In the AN/SRT-16, operation of the right or left transmitter group will energize the blowers in the mounting. If the blowers do not operate when one of the transmitter groups is being used, try using the other transmitter group. If the blowers now operate, the trouble is in the low voltage power supply (LVPS), and not in the mounting.

If the CABINET HEATER indicator light does not light when the CABINET HEATER switch (N) is closed, check fuses F-3001 and F-3002 in the LVPS. Figure 7-166 is the schematic for the base mount.

Note

In the AN/SRT-16, CABINET HEATER switch (N) on either of the LVPS front panels will operate their respective cabinet heaters and associated indicator lamps.

b. REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—None.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—To gain access to air filters O-706, O-707, and O-708 (figure 7-89), remove the front panel of the mounting at the base of the cabinet by loosening the four captive screws that hold the panel in place.

To clean the air filters, refer to Section 6.

To reach heating elements HR-701 through HR-704 and blowers B-701 and B-702, the cabinets on top of the mounting must be taken off.

Blower assemblies B-701 and B-702 (figure 7-89) may be removed as follows:

Step 1. Remove the clamp assembly.

Step 2. Loosen clamps H-702 and H-703, and remove blower connector O-709.

Step 3. Loosen air duct clamp assembly H-705, and disconnect ground strap.

Step 4. Disconnect leads to blower motor, and remove blower assembly B-701. Blower assembly B-702 is removed in the same manner.

(b) REPLACEMENT.—To replace any part of the mounting, reverse the removal procedure.

13. CABINET, ELECTRICAL EQUIPMENT CY-1571/SRT (100-WATT FRAME ASSEMBLY).

(See figures 7-90 and 7-91.)

a. TROUBLE LOCATION.—If a unit operates when the test cable (Section 3) is used, but does not operate when properly seated in the cabinet, the extensible cable assembly and the mating connectors for that drawer should be checked. If there is no input power to the transmitter group, and all unit fuses are known to be good, check filters Z-601 and Z-602. If there is no power to the RFO oven circuits and fuse F-2918 is good, check filters Z-603 and Z-604. Figure 7-167 is the wiring diagram for the transmitter group cabinet.

NOTES

1. USE MULTIMETER ME-25A/U SCALE WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON THE 1 VOLT SCALE; A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON THE 250 VOLT SCALE.

2. UNLESS OTHERWISE INDICATED, TRANSMITTER AT 100 WATT LEVEL, SERVICE SELECTOR SWITCH ① IN HAND POSITION, TEST KEY ① IN CENTER POSITION, D-C VOLTAGE READING.

* CW OR PHONE/CW OR PHONE WITH TEST KEY ① IN OPERATION POSITION.

**CW OR PHONE, SAME READINGS WITH ① IN CENTER POSITION OR IN OPERATING POSITION.

† MEASURED WITH 5000 VOLTAGE ADAPTER.

†† HIGH VOLTAGE, DANGER, DO NOT MEASURE.

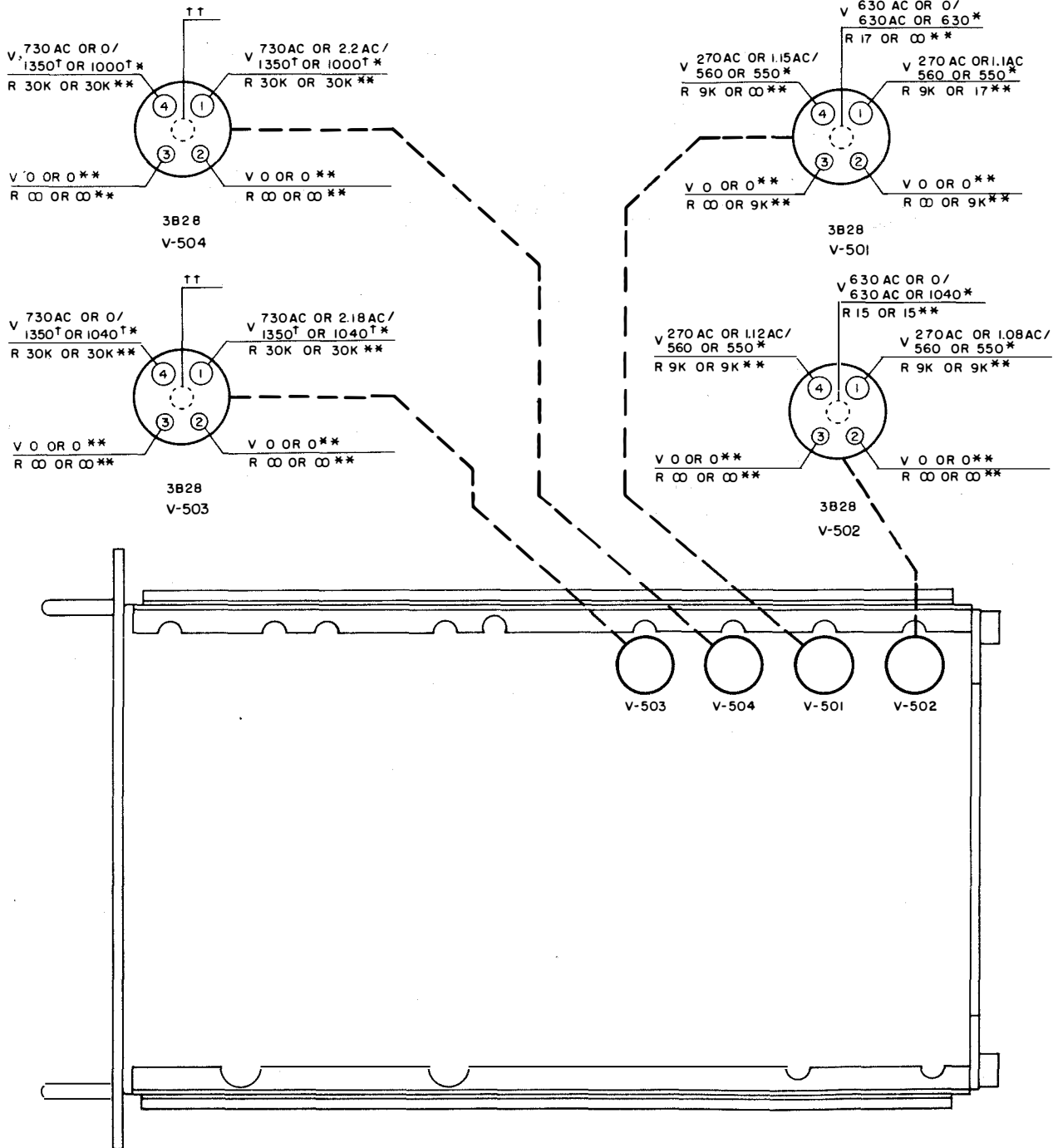
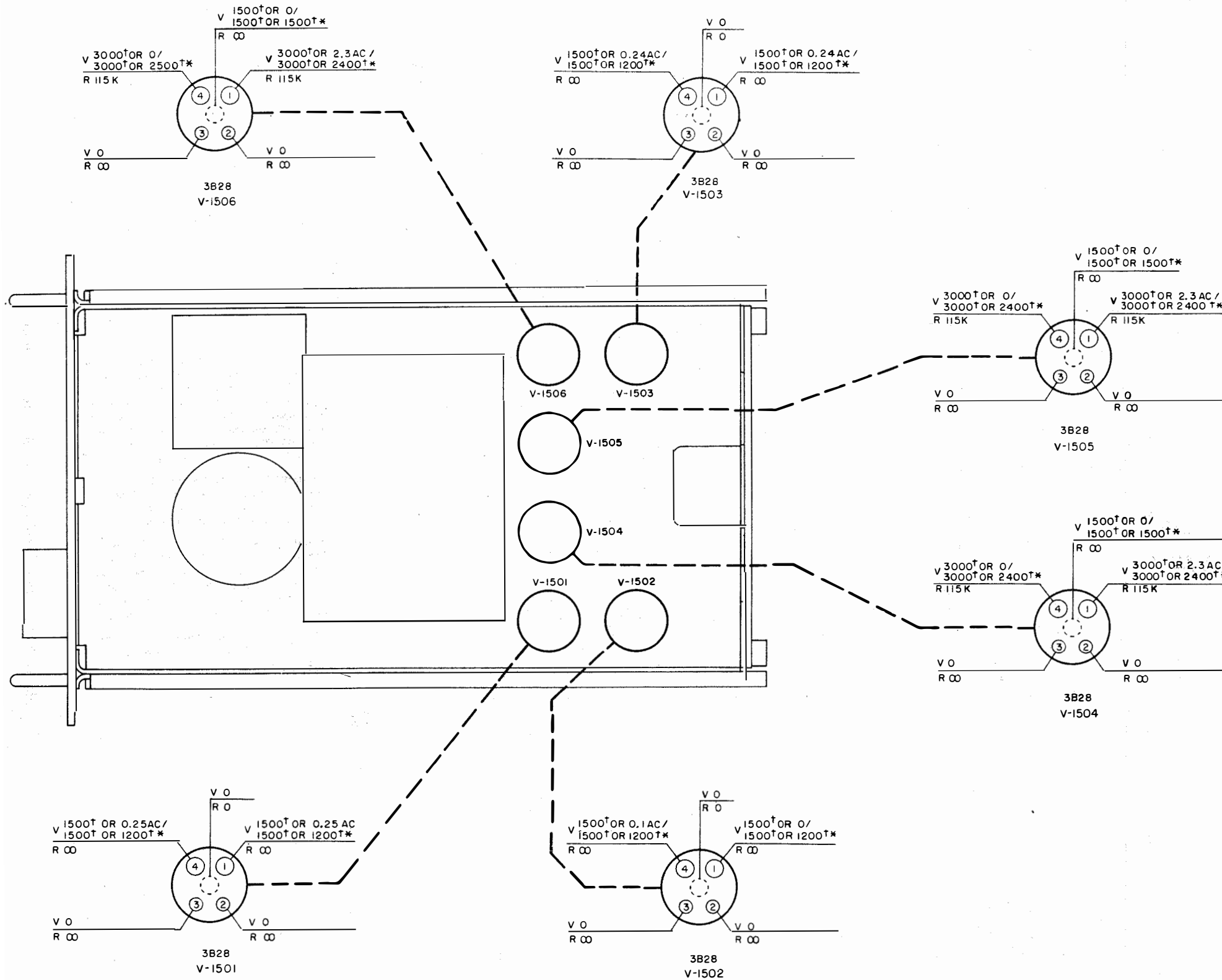


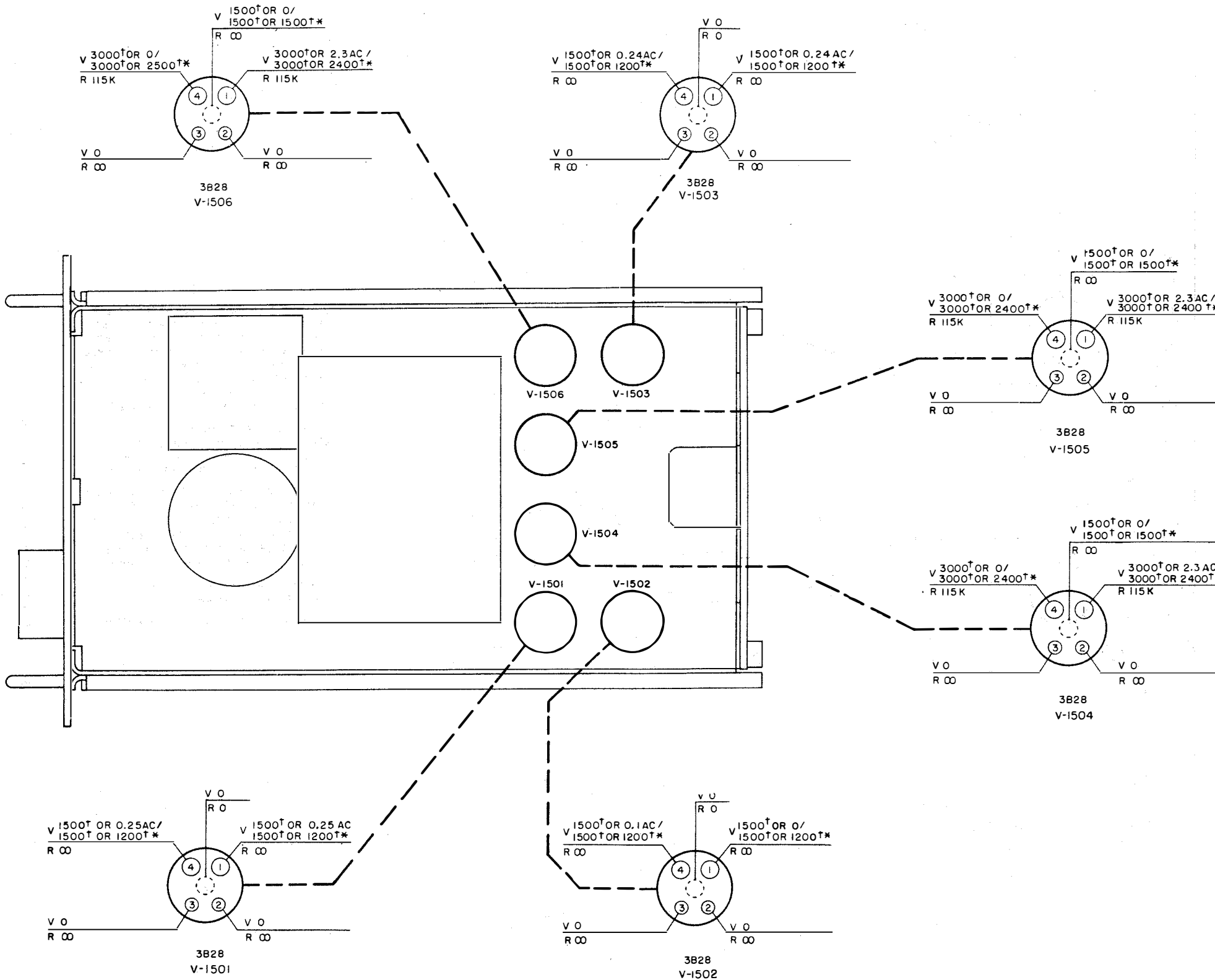
Figure 7-85. MVPS, Voltage and Resistance Chart



NOTES

1. USE THAT SCALE OF MULTIMETER ME-25A/U WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON THE 1 VOLT SCALE; A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON THE 250 VOLT SCALE.
 2. TRANSMITTER AT 500 WATT LEVEL, SERVICE SELECTOR SWITCH (U) AT HAND POSITION, TEST KEY (T) IN CENTER POSITION, UNLESS OTHERWISE INDICATED.
 3. WHERE VOLTAGES OR RESISTANCES ON ANY ONE PIN ARE THE SAME FOR THE TWO OR MORE OPERATIONS (CW., PHONE, TEST KEY (T) IN CENTER POSITION, TEST KEY (T) IN OPERATING POSITION) THE CORRECT VALUE WILL BE INDICATED ONLY ONCE.
- * CW OR PHONE/CW OR PHONE WITH TEST KEY (T) IN OPERATING POSITION.
† MEASURED WITH 5000 VOLT ADAPTER.

Figure 7-86. HVPS, Voltage and Resistance Chart



NOTES

1. USE THAT SCALE OF MULTIMETER ME-25A/U WHICH WILL PERMIT THE READING TO BE INDICATED AT MAXIMUM DEFLECTION AND STILL BE WITHIN THE SCALE. FOR EXAMPLE A NOMINAL 0.5 VOLT READING SHOULD BE MEASURED ON THE 1 VOLT SCALE; A NOMINAL 100 VOLT READING SHOULD BE MEASURED ON THE 250 VOLT SCALE.
 2. TRANSMITTER AT 500 WATT LEVEL, SERVICE SELECTOR SWITCH (U) AT HAND POSITION, TEST KEY (T) IN CENTER POSITION, UNLESS OTHERWISE INDICATED.
 3. WHERE VOLTAGES OR RESISTANCES ON ANY ONE PIN ARE THE SAME FOR THE TWO OR MORE OPERATIONS (CW., PHONE, TEST KEY (T) IN CENTER POSITION, TEST KEY (T) IN OPERATING POSITION) THE CORRECT VALUE WILL BE INDICATED ONLY ONCE.
- * CW OR PHONE/CW OR PHONE WITH TEST KEY (T) IN OPERATING POSITION.
† MEASURED WITH 5000 VOLT ADAPTER.

Figure 7-86. HVPS, Voltage and Resistance Chart

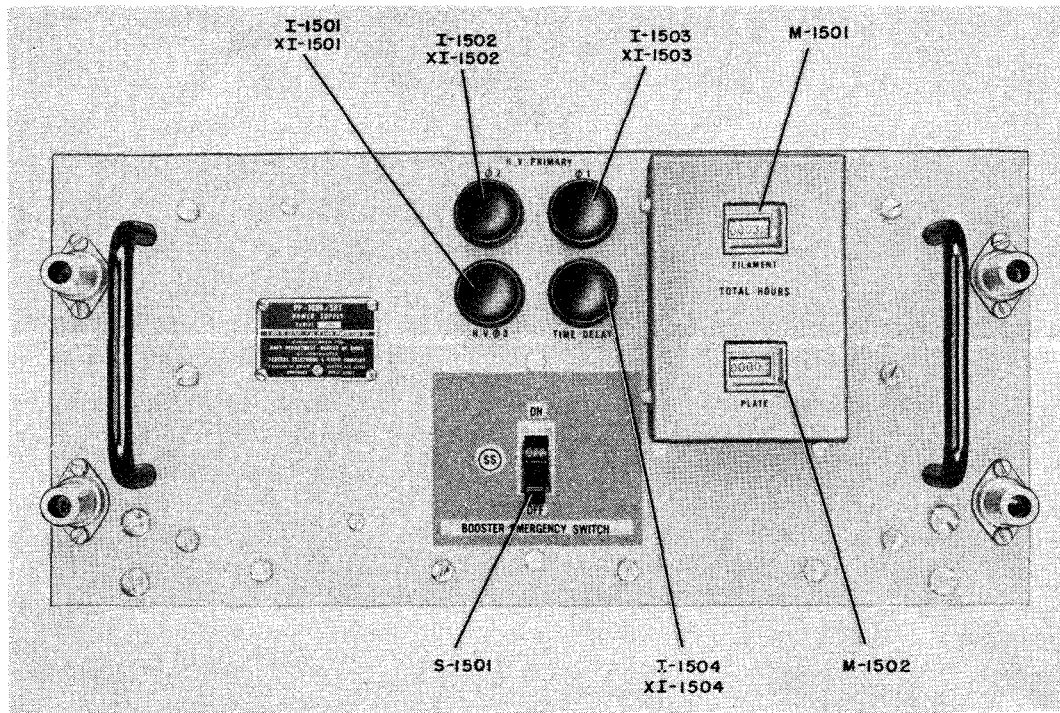


Figure 7-87. Power Supply PP-1096/SRT (HVPS), Front Panel

b. REPAIR AND ADJUSTMENT.

- (1) ELECTRICAL ADJUSTMENTS.—None.
- (2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—To reach the terminal boards and r-f interference filters, the medium voltage power supply (MVPS) must be removed. Remove the protective cover plate to gain access to the terminal boards. (See figure 7-91.) To remove the cable supports and extensible spring assemblies, loosen two screws on supporting clamp, and remove assembly (figure 7-90). It is not necessary to remove clamp block from the cabinet to remove the cable supports.

Note

When working on the interconnecting cables, rail assemblies, and associated equipment on the rear of the cabinet, remove the side panels for greater accessibility.

WARNING

SHIP'S POWER IS ALWAYS PRESENT ON THE TERMINAL BOARDS. TO REMOVE THIS VOLTAGE, POWER MUST BE TURNED OFF AT THE SHIP'S DISTRIBUTION PANEL.

(b) REPLACEMENT.—Reverse the removal procedure to replace a part in the transmitter group cabinet. Figures 7-90 and 7-91 show the location of components in the transmitter group cabinet.

**14. CABINET, ELECTRICAL EQUIPMENT
CY-1572/SRT (HLRM CABINET).**

a. TROUBLE LOCATION.—The extensible connecting cable assembly should be checked for continuity when the high level radio modulator (HLRM) does not operate with the interconnecting cables properly seated on the unit.

WARNING

SHIP'S POWER IS ALWAYS PRESENT ON TERMINAL BOARDS. POWER MUST BE TURNED OFF AT THE SHIP'S DISTRIBUTION PANEL TO REMOVE THIS VOLTAGE.

See figure 7-168 for the high level radio modulator cabinet wiring diagram.

b. REPAIR AND ADJUSTMENT.

- (1) ELECTRICAL ADJUSTMENTS.—None.
- (2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—To remove the extensible cable support and spring assembly, loosen two screws on the supporting clamp, and remove assembly. It is not necessary to remove the clamp block from the cabinet to remove the cable supports.

Remove the terminal board cover to reach the terminal boards. Removing the side panels of the HLRM cabinet will make the extensible cable assembly, ter-

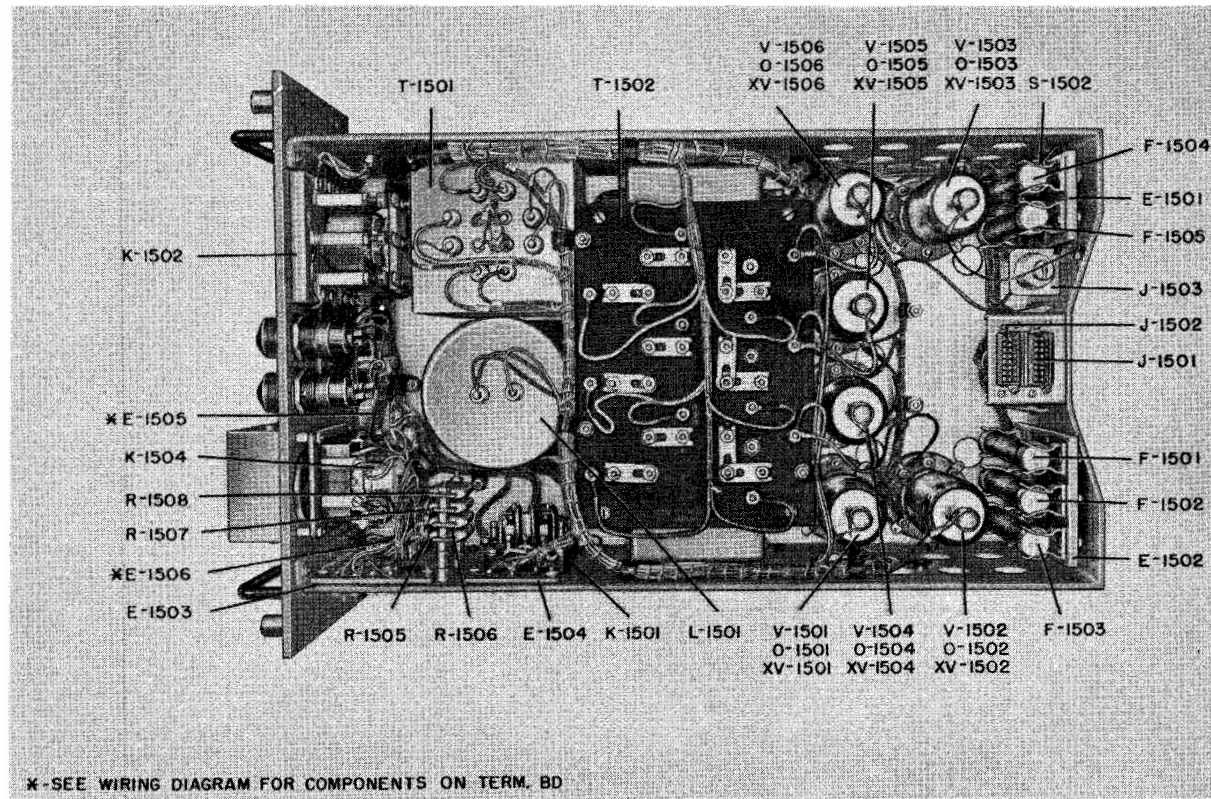


Figure 7-88. Power Supply PP-1096/SRT (HVPS), Top View

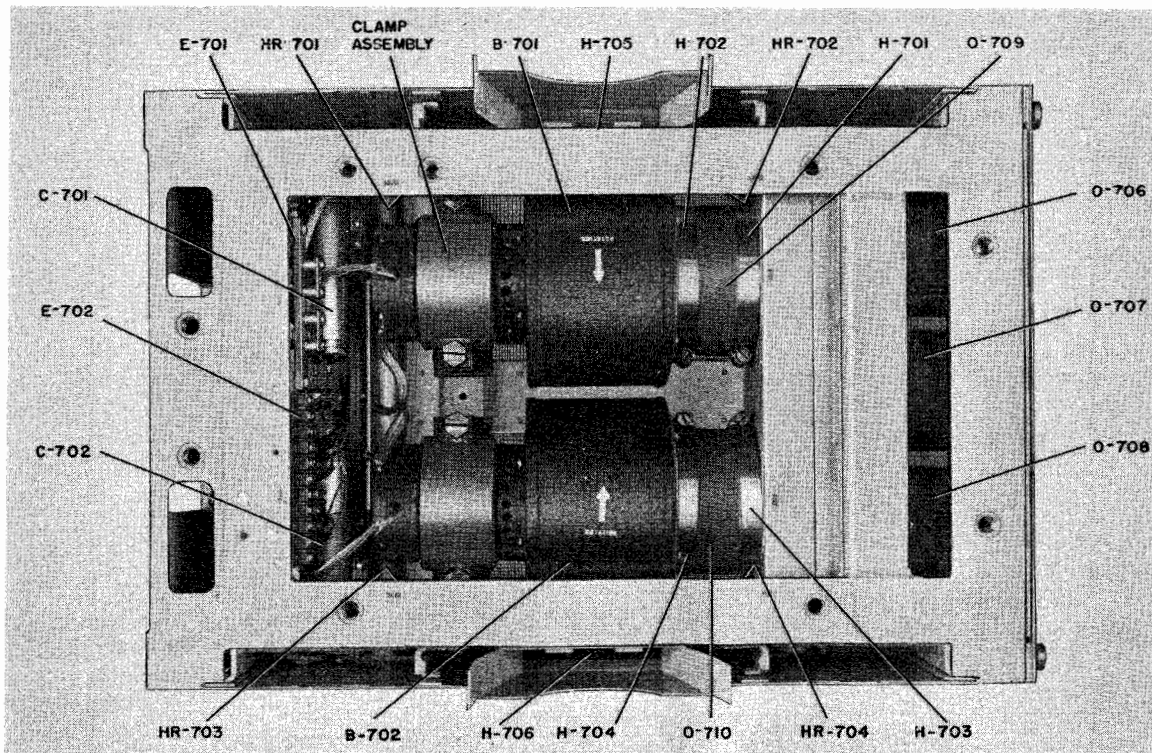


Figure 7-89. Mounting MT-1423/SRT, Top View

terminal boards and the rail assemblies more accessible. Figure 7-92 shows the location of components in the HLRM cabinet.

(b) REPLACEMENT.—To replace a part of the HLRM cabinet, reverse the removal procedure.

**15. CABINET, ELECTRICAL EQUIPMENT
CY-1573/SRT (HVPS CABINET).**

a. TROUBLE LOCATION.—The extensible connecting cable assembly should be checked for continuity when the high voltage power supply (HVPS) does not operate with the interconnecting cables properly seated on the unit. When there is no three-phase power to the HVPS, and the HVPS fuses are known to be good, check r-f interference filters Z-1401, Z-1402 and Z-1403, located at the bottom of the HVPS frame.

WARNING

**SHIP'S POWER IS ALWAYS PRESENT ON
TERMINAL BOARDS. TO REMOVE THIS
VOLTAGE, POWER MUST BE TURNED
OFF AT THE SHIP'S DISTRIBUTION
PANEL.**

See figure 7-169 for the high voltage power supply cabinet wiring diagram.

b. REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—None.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—To remove the extensible cable support and spring assembly, loosen two screws on the supporting clamp and remove assembly. It is not necessary to remove the clamp block from the cabinet to remove the cable supports.

Remove the terminal board cover to reach the terminal boards. Removing the side panels of the HVPS cabinet will make the extensible cable assembly, terminal boards, and the rail assemblies more accessible. Figure 7-93 shows the location of components in the HVPS cabinet.

(b) REPLACEMENT.—To replace a part in the HVPS cabinet, reverse the removal procedure.

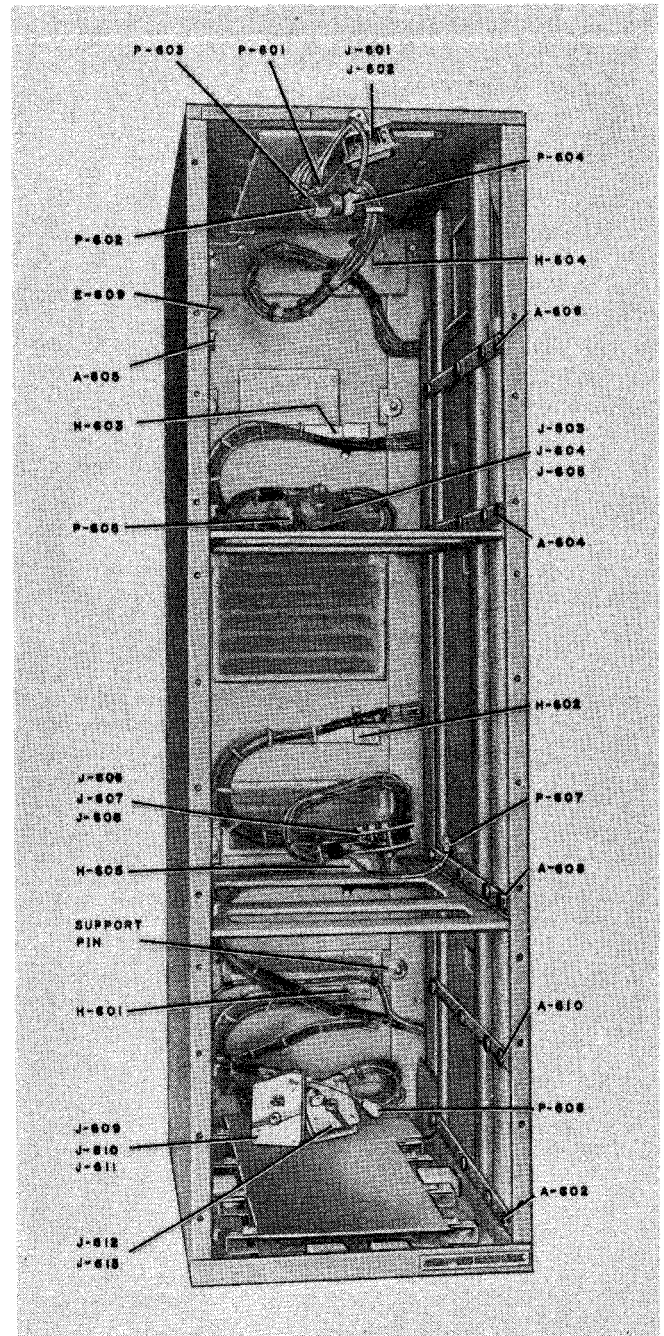
16. ANTENNA TUNING EQUIPMENT.

a. SYSTEM TROUBLE SHOOTING.—The antenna tuning equipment consists of Radio Frequency Tuner TN-229/SRT and Antenna Coupler CU-372/SRT. Control-Indicator C-1352/SRT and Transmitter Coupler CU-402/SRT are also used with the antenna tuning equipment but are part of Transmitter Group OA-684/SRT.

The antenna tuning equipment should provide a standing wave ratio (SWR) of better than 4:1. Section 4, in conjunction with the antenna tuning chart mounted on the RFO panel of the transmitter, indicates switch and control settings for the antenna tuning

equipment at different transmitter frequencies when a 35-foot whip antenna is used. If their settings do not provide a proper SWR, use the antenna tuning equipment trouble-shooting chart, table 7-40, to localize the probable source of trouble to a specific unit. It is assumed, in the following trouble location procedures, that the transmitter bay is operating satisfactorily; the primary concern is with defects within the antenna tuning equipment.

The trouble-shooting chart, table 7-40, is to be used by observing visual indications of the control-indicator



**Figure 7-90. Electrical Equipment Cabinet CY-1571/
SRT (100 W. Frame), Units Removed, Front View**

unit and aural indications of motor noises in the r-f tuner and antenna coupler, without the aid of test equipment.

When trouble has been localized to a particular unit, refer to the trouble location information for that unit. If a defect or trouble is located, or a suspected defect or trouble is indicated, then the testing and alignment instructions for a particular unit are to be followed to locate the suspected defective component or stage.

Note

A visual inspection of each unit should be made. Check all plugs, receptacles, wiring, solder joints and grounds. Plugs and receptacles should be tightly connected. Adapters on first extrusion cables should be securely fastened by the setscrews. (After inspection, replace tape on adapters.) Make sure that no short or open circuits exist in the wiring and that all solder joints and grounds are secure.

b. TEST AND ALIGNMENT.—The test and alignment instructions in the succeeding paragraphs are to be followed only after the trouble location procedure has indicated a defective unit or subassembly.

Refer to figure 7-116 for a simplified control circuit of the r-f tuner and antenna coupler. Reference should also be made to unit schematics, wiring diagrams and component identification illustrations.

**17. TRANSMITTER COUPLER CU-402/SRT
 (LOAD ADJUST UNIT).**

(See figure 7-94.)

a. TROUBLE LOCATION.—The Transmitter Coupler CU-402/SRT (load adjust unit) function is to improve the impedance match between the radio frequency amplifier and the antenna tuning equipment. If all of the transmitter and antenna tuning operations have been followed, and a proper standing wave ratio (SWR) cannot be obtained, trouble may exist in the transmitter coupler, provided it has been determined that the antenna coupler and r-f tuner are operating properly as determined by the trouble-shooting chart, table 7-40.

Autotransformer T-3201, switches S-3201 (V) and S-3202 (W), and r-f ammeter M-3201 comprise the impedance matching circuit. If switches (V) and (W) do not operate properly at all of the settings, the impedance matching circuit components and the contacts on the switch wafers should be checked for continuity.

Standing wave ratio (SWR) monitor Z-3201 detects and monitors the transmission line SWR in conjunction with Control-Indicator C-1352 SRT, mounted on the radio frequency oscillator front panel.

When a proper SWR cannot be obtained, and the components in the control-indicator, antenna coupler, and r-f tuner are known to be functioning properly, trouble may exist in the SWR monitor Z-3201 circuit.

TABLE 7-40. ANTENNA TUNING EQUIPMENT TROUBLE-SHOOTING CHART

| CONDITIONS | NORMAL INDICATIONS | PROBABLE SOURCE OF ABNORMAL INDICATIONS |
|---|---|--|
| Rotate TRANSFORMER knob (A). | Motor noise in r-f tuner. | Motor B-303 in r-f tuner. |
| Rotate ANTENNA COUPLER LOADING knob (B). | Motor noise in antenna coupler. | Motor B-3501 in antenna coupler. |
| Indication on POSITION meter. | 0 to 100 depending on position of r-f tuner sliding short. Motor noise. | Potentiometer R-301. Drive motor B-301 in r-f tuner. |
| Operate ANTENNA TRANSFER switch (C). | Motor noise in antenna coupler. | Motor B-3502 in antenna coupler. |
| Indication on SWR BALANCE meter. | LOW or HIGH, depending on SWR. | SWR monitor circuit Z-3201 in transmitter coupler. |
| Rotate SWR CALIBRATE knob (D). | Greater indication approaching position 2:1. | R-410, R-412; R-414, R-415 and R-416 in control-indicator unit. |
| ANTENNA TRANSFER switch (E) to TUNER IN. | TUNER IN indicator lamp I-401 lights. | ANTENNA TRANSFER SWITCH (E). TUNER IN indicator lamp I-401. |
| Depress UP switch (F) and then DOWN switch (G). | POSITION meter indicates up (towards 100) and down (towards 0) position. | Main drive motor B-301. Clutch-brake assembly O-301 in r-f tuner. |
| Depress UP switch (F). | One-way scanning time from 0 to 100 on POSITION meter should be approximately 22 seconds. | Main drive motor B-301. Clutch-brake O-301 adjustment. |
| Depress UP switch (F) and SLOW switch (H) simultaneously. | One-way scanning time from 0 to 100 on POSITION meter should be approximately 52 seconds. | Main drive motor speed limiting governor S-307. R-302 and C-301 in governor circuit of B-301 in r-f tuner. |

(1) **ELECTRICAL ADJUSTMENTS.**— Standing wave ratio (SWR) monitor Z-3201 in the transmitter coupler is a critical electrical component. If possible, it should be replaced as a unit when it is known to be faulty. However, if replacements are not available, and operation is essential, an experienced technician, with adequate test facilities, may use the following procedure to repair unit Z-3201.

CAUTION

Repair should not be attempted by inexperienced personnel or without adequate test facilities, as these procedures are outlined for base depot use *only*.

Note

When soldering components in Z-3201, hold leads with a heat conducting device, such as pliers, to avoid damage to Z-3201 due to heat. Replace components in exactly the same physical location as the original part to assure constant distributed capacity in circuit.

Switches S-3201 (Ⓜ), S-3202 (Ⓜ) and transformer T-3201 may be checked by making a continuity check, using Multimeter ME-25A/U (or equivalent), in conjunction with the schematic, figure 7-174, and wiring diagram, figure 7-175.

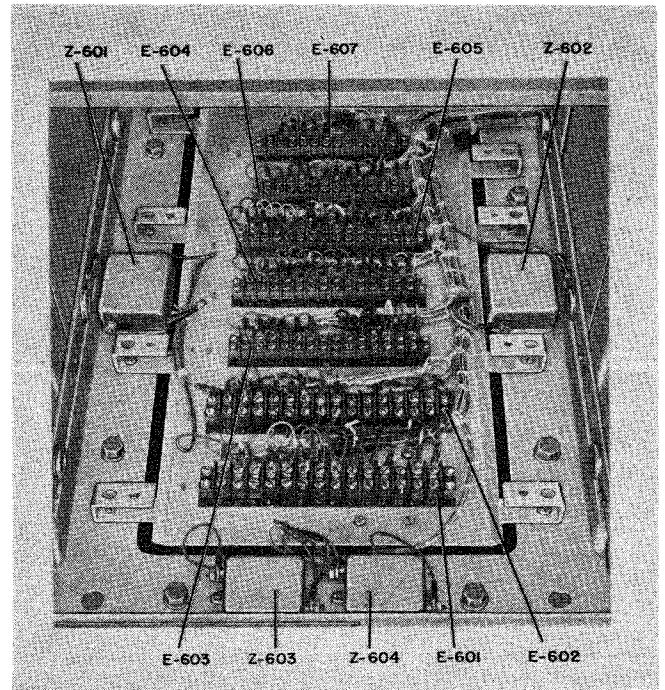


Figure 7-91. Electrical Equipment Cabinet CY-1571/SRT (100 W. Frame), Cover Removed Showing Terminal Boards

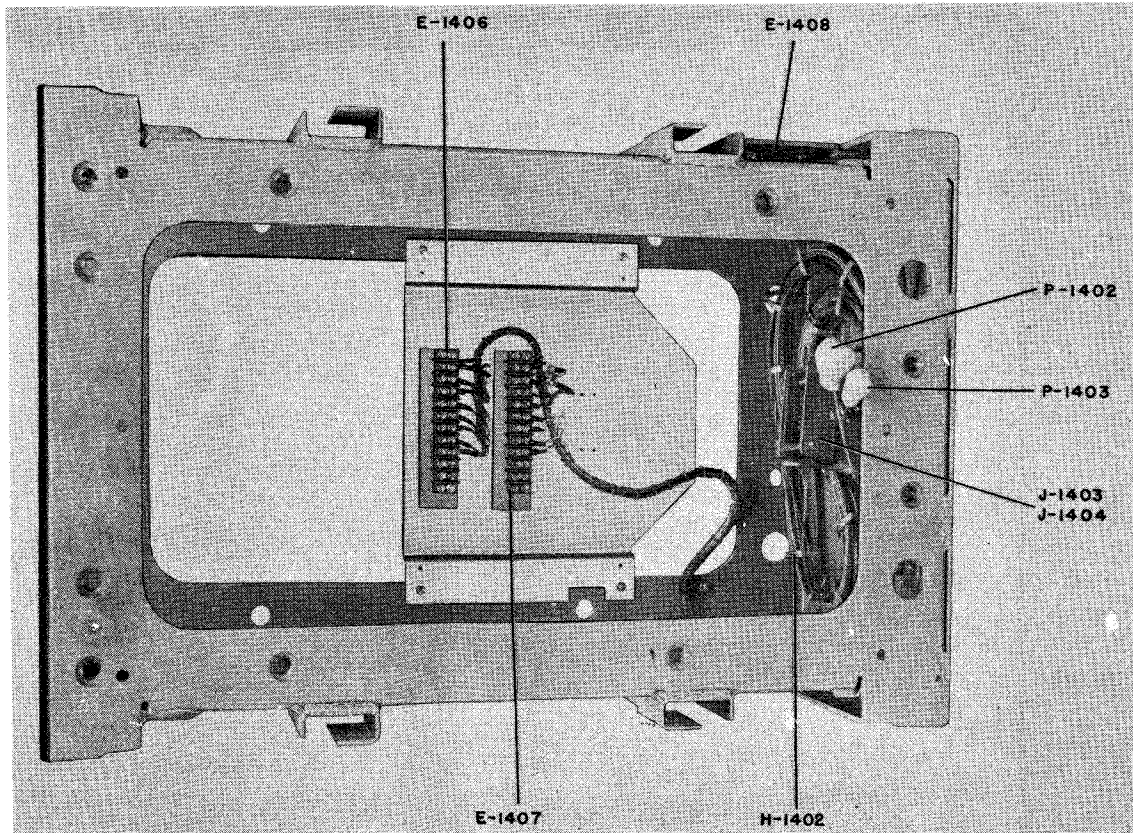


Figure 7-92. Electrical Equipment Cabinet CY-1572/SRT (HLRM Frame), Side Covers Removed, Top View

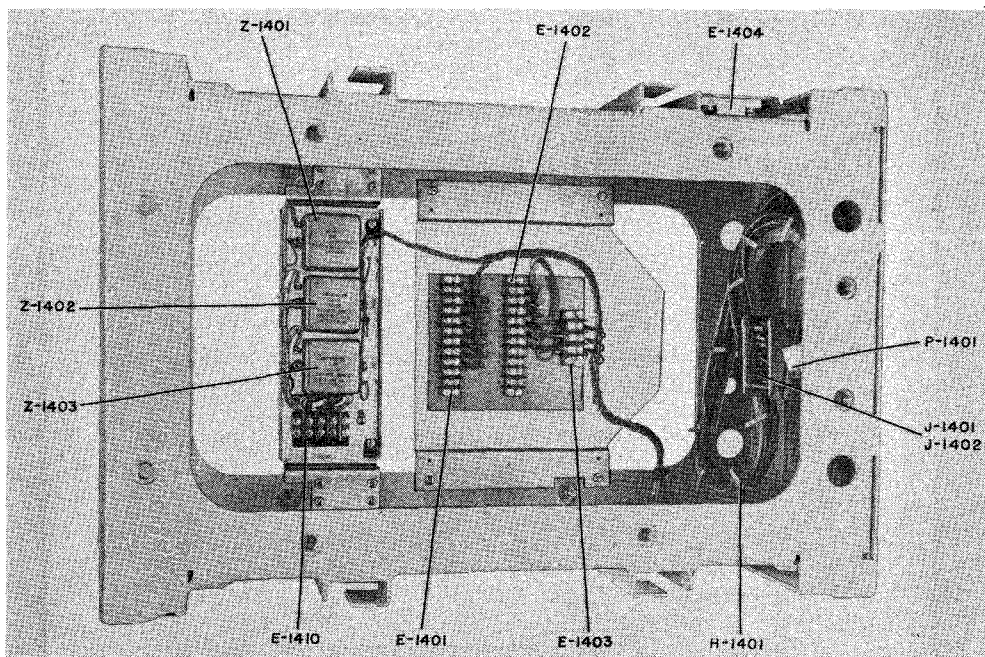


Figure 7-93. Electrical Equipment Cabinet CY-1573/SRT (HVPS Frame), Side Covers Removed, Top View

(a) VOLTAGE DIVIDER R-3201.—Whenever a component is replaced in voltage divider R-3201, the following procedure must be observed:

Note

Protect resistors from heat when soldering.

Step 1. On Resistance Bridge ZM-4/U, measure resistance from point E (figure 7-174) to point F. This value must be between 3,875 and 4,280 ohms. Correct if necessary by changing the 510-ohm resistor nearest to point E.

Step 2. Measure resistance of each of the arms (1,000-ohm resistors, point F to point G, and point F to point H on figure 7-174). Resistance of each arm must be within 3,800 or 4,200 ohms. Resistance of arm F to G must be within 120 ohms of resistance of arm F to H. To correct, change resistor in either arm nearest to point G or H.

(b) R-3206 AND R-3207.—Whenever R-3206 or R-3207 is replaced, the selection of these components must be determined with the following test equipment:

R-f source, 50 watts at 3.0 mc. The AN/SRT-14, 15 and 16 may be used as an r-f source, by detuning the radio frequency amplifier (RFA) to provide the required r-f output.

Dummy Load DA-91/U.

Two test potentiometers consisting of 500-ohm, 1/2-watt potentiometers, good at 3.0 mc (Centralab Model 1 Hi-Torque Radiohm, or equivalent) in series with 100-ohm 1/2-watt resistors.

D-c Microammeter, Navy type 60107.

Four-pole two-position (4PDT) switch, assembled with two 5,100-ohm, 1/2-watt and one 100-ohm, 1/2-watt fixed resistors, assembled as shown in figure 7-95.

Proceed as follows to replace R-3206 and R-3207:

Step 1. Connect test potentiometer assemblies (500-ohm potentiometer and 100-ohm fixed resistor) for R-3206 and R-3207, keeping lead length as short as possible. Adjust potentiometer to near maximum resistance.

Step 2. Feed approximately 50 watts rf at 3.0 mc into monitor at A with Dummy Load DA-91/U on

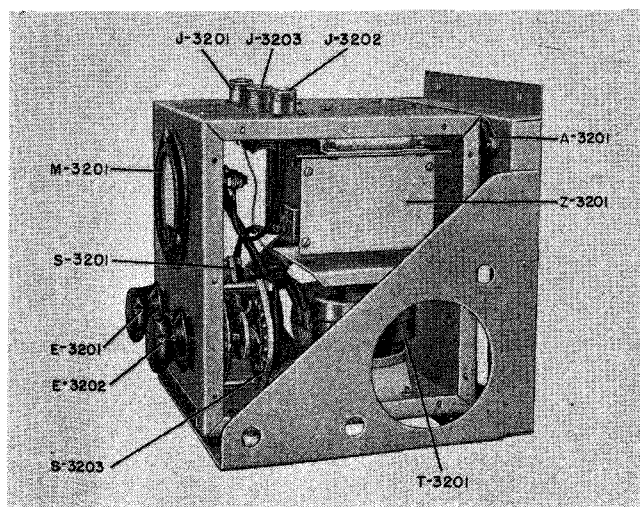


Figure 7-94. Transmitter Coupler CU-402/SRT, Side Covers Removed, Right Inner View

output at B and 4PDT switch in REFL position. Adjust potentiometer in place of R-3207 to give minimum output from terminal C as indicated on microammeter. This should be less than 5 microamperes and as close to zero as possible.

Step 3. Reverse monitor connections, feeding approximately 50 watts rf at 3.0 mc into monitor at B with Dummy Load DA-91/U at A, and 4PDT switch in INC position. Adjust potentiometer in place of R-3206 to give minimum output from terminal D as indicated on microammeter. This should be less than 5 microamperes and as close to zero as possible. Remove test potentiometer assemblies and measure resistance of each on Resistance Bridge ZM-4/U. Replace each with selected fixed resistor whose actual resistance is within 1 percent of the respective value measured. This may necessitate paralleling two 1/2-watt resistors, in which case select one resistor whose measured resistance is slightly above (within 35 ohms) the required value. Determine parallel resistance necessary to bring total resistance to required value as follows:

$$X = \frac{A B}{A+B}$$

where

- A = resistance available
- B = total resistance required
- X = parallel resistance

Choose for X a 1/2-watt resistor whose value is as close to X as possible within 10 percent below calculated value.

(c) TRANSFORMER T-3202 LOADING CIRCUIT (R-3202, R-3203 AND R-3204, R-3205).—The selection of these resistor combinations (R-3202, R-3203 and R-3204, R-3205) should be such that they will be within 1 ohm of each other, as measured by means of Resistance Bridge ZM-4/U.

(d) MATCHING PROCEDURE FOR CRYSTAL DIODES.—Use the following test equipment for matching crystal diodes:

CAUTION

Repair should not be attempted by inexperienced personnel, or without adequate test facilities, as these procedures are outlined for base depot use *only*.

Signal generator, 0.3 and 26.0 mc, AN/URM-25 (or equivalent).

Multimeter ME-25A/U, (or equivalent)

D-c Microammeter, Navy type 60107 (or equivalent)

5,600-ohm $\pm 5\%$, 1/2-watt fixed carbon resistor

0.15 μ f fixed, 200-vdcw, paper capacitor

Note

Before matching, crystals must be aged by heating at 100°C. (212°F.) and maintain this temperature for one hour.

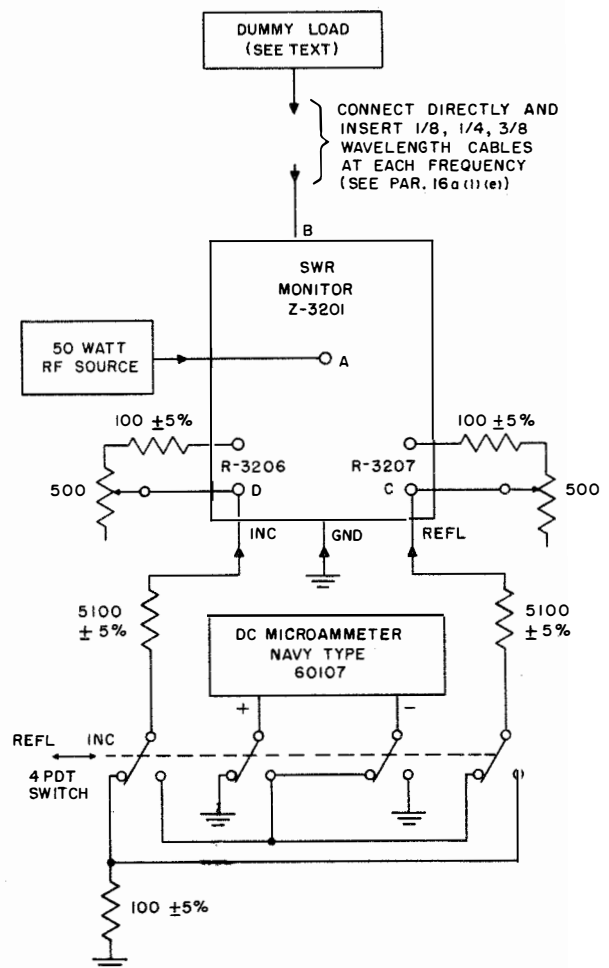


Figure 7-95. Standing Wave Ratio (SWR) Monitor Alignment, Test Setup

Step 1. Connect equipment as shown in figure 7-96.

Step 2. Apply maximum r-f voltage from the AN/URM-25, as indicated in figure 7-96, with crystal diode in place. Measure and record d-c current on microammeter, Navy Type 60107, to nearest 5 microamperes. Compare the diode currents at 0.3 mc, and then compare the diode currents at 26 mc. Keep the AN/URM-25 output the same at both 0.3 mc and 26 mc.

Step 3. Select pairs of crystals for CR-3201 and CR-3202 that are within 10 microamperes at both 0.3 mc and 26.0 mc.

(e) FINAL TEST TO BE PERFORMED WHEN SWR MONITOR Z-3201 IS REPLACED IN TRANSMITTER COUPLER CU-402/SRT.—The following additional test equipment is required:

RG-8/U, 1/4 and 1/8 wavelength cables, constructed as follows:

Cut 3/8 wavelength of cable for 2.0 mc (122 feet), 8.0 mc (30.5 feet) and 25.0 mc (9.75 feet). Cut 1/3 off total length of 3/8 wavelength cables and term-

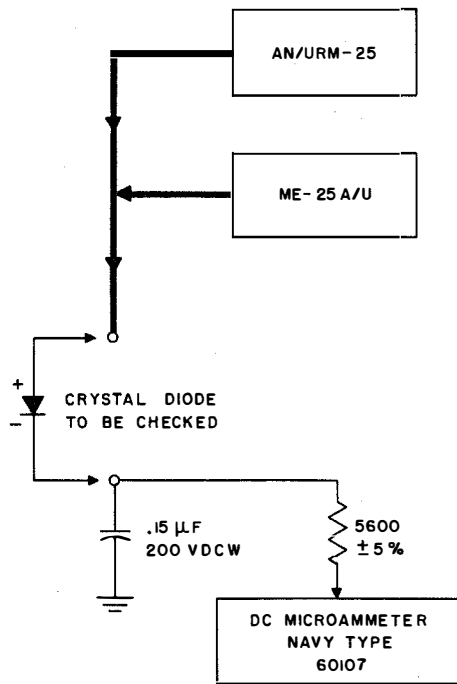


Figure 7-96. Crystal Matching, Test Setup

inate each cable. Measure 1/4 wavelength cable with Radio Frequency Bridge, Navy Type 60094 (or equivalent), shifting frequency slightly to determine point of "O" reactance—perform for each frequency (1/8 wavelength cable will be correct for same frequency). Use these frequencies in the test. Attach proper connectors as required.

R-f source, 50 watts at 2.0, 8.0, and 25.0 mc. (The AN/SRT-14, 15 or 16 may be used, by detuning RFA stages.)

Dummy Load DA-91/U. Four required, with proper connectors to connect four in parallel.

Refer to figure 7-95, and proceed as follows:

Set r-f source in turn to each frequency determined for cable lengths (nominally 2, 8, and 25 mc). Perform the following at each frequency, using four dummy loads in parallel:

Step 1. With load directly on monitor r-f output (B of Z-3201), 4PDT switch in REFL position, read current on microammeter. Switch 4PDT to INC position and read microammeter. Calculate standing wave ratio (SWR) and record.

$$SWR = \frac{INC + REFL + 106}{INC - REFL}$$

Step 2. Insert 1/8 wavelength cable between monitor and load and proceed as in step 1.

Step 3. Insert 1/4 wavelength cable between monitor and load and proceed as in step 1.

Step 4. Insert 3/8 wavelength cable between monitor and load and proceed as in step 1.

Limits: Indicated SWR must be between 3:1 and 6:1.

(2) MECHANICAL ADJUSTMENTS.—There are no mechanical adjustments in Transmitter Coupler CU-402/SRT.

(a) REMOVAL AND REPAIR.—The transmitter coupler, figure 7-94, may be removed from the mounting bracket as follows:

Step 1. Disconnect cables to J-3201, J-3202, and J-3203.

Step 2. Remove screws supporting shock mounts to mounting bracket.

All components in the transmitter coupler are accessible by removing both side panels on unit.

(b) REPLACEMENT.—To reassemble the transmitter coupler, reverse the disassembly procedures. No lubrication is necessary in the transmitter couplers.

18. ANTENNA COUPLER CU-372/SRT.

(See figure 7-97.)

a. TROUBLE LOCATION.

(1) GENERAL.—After isolating trouble to the antenna coupler by using the antenna tuning equipment trouble location chart, table 7-40, a further check of the antenna coupler may be performed to localize the trouble to either the bypass section or the loading section of the antenna coupler.

A circuit check of the antenna coupler may be accomplished as a bench test by supplying 115 volts ac and 24 volts dc to actuate the switches in the antenna coupler, and checking for continuity through the switch contacts.

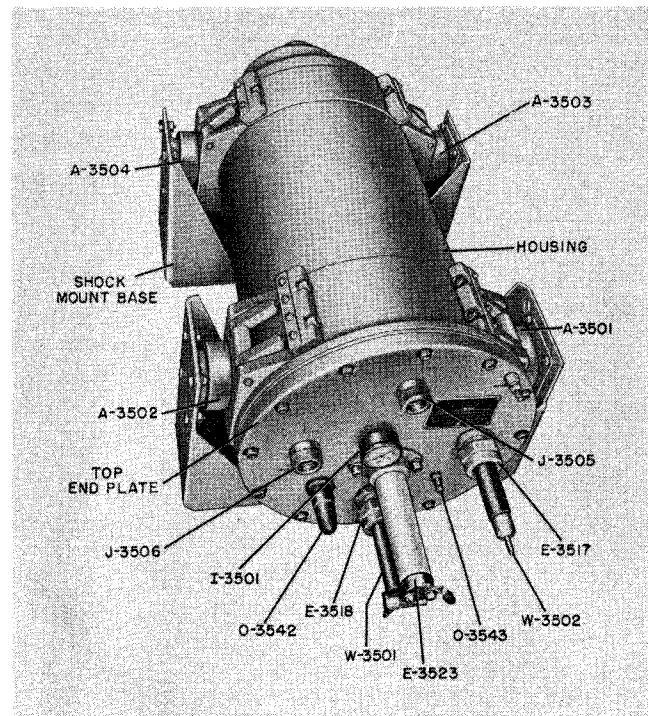
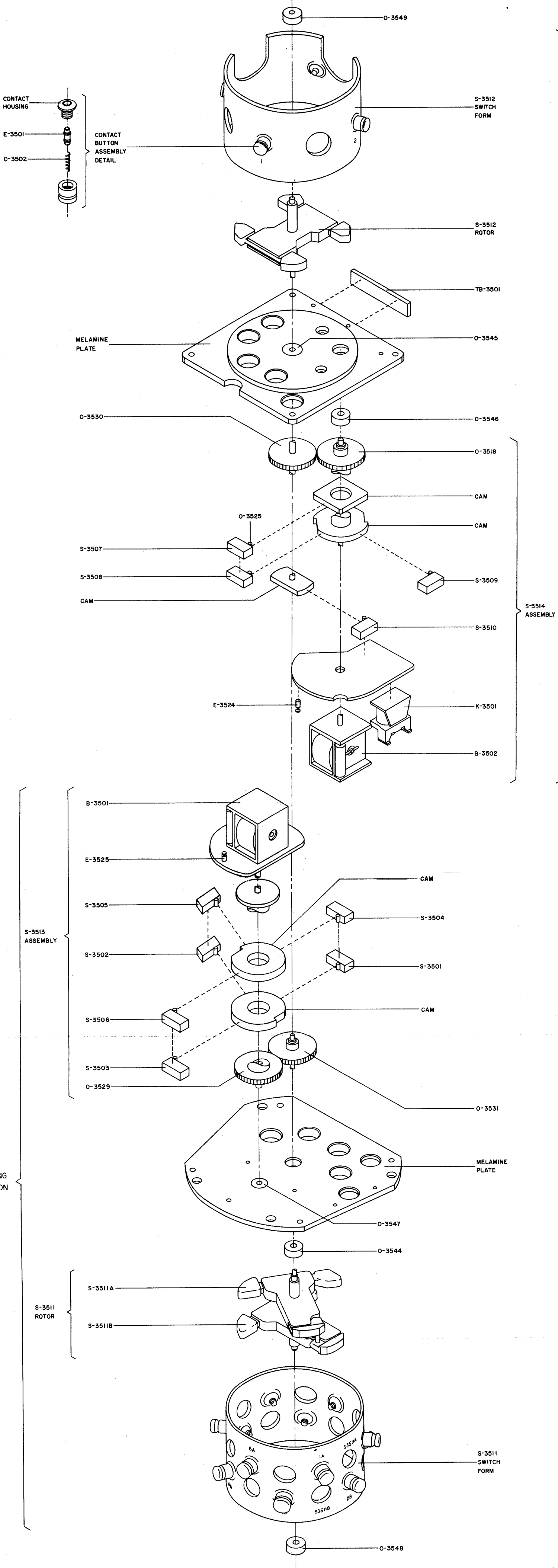


Figure 7-97. Antenna Coupler CU-372/SRT, with Housing and Shock Mounts



BYPASS SECTION

S-3514 ASSEMBLY

S-3513 ASSEMBLY

LOADING SECTION

S-3511 ROTOR

CORRECTIVE MAINTENANCE

NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A

Section 7

Figure 7-98. Antenna Coupler CU-372/SRT, Mechanical Drives

ORIGINAL

7-113

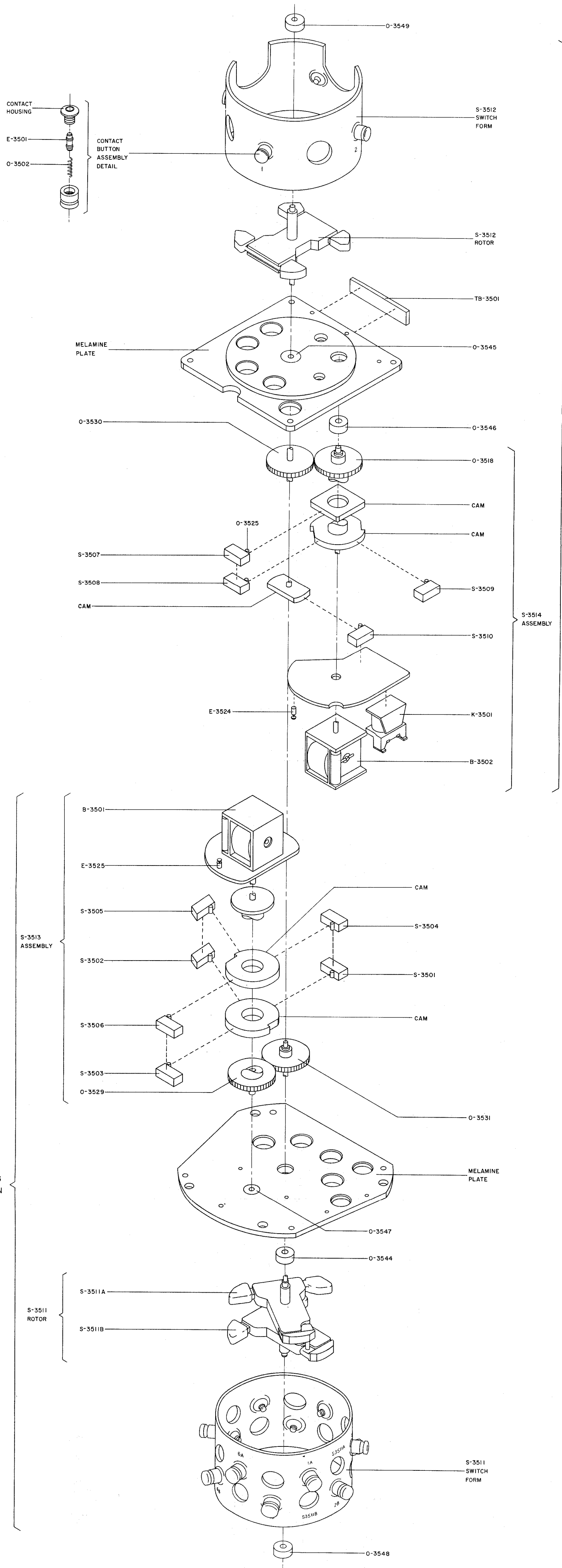


Figure 7-98. Antenna Coupler CU-372/SRT, Mechanical Drives

ORIGINAL

It is not necessary to disassemble the antenna coupler for these circuit checks, as measurements and connections are made directly at the pins on the receptacles of the antenna coupler assembly. Refer to the schematic, figure 7-170, and wiring diagram, figure 7-171, sheets 1 and 2.

(2) TROUBLE SHOOTING THE ANTENNA COUPLER BYPASS SECTION, SWITCH ASSEMBLY S-3514, AND SWITCH S-3512.

Power requirements: 115 volts ac, 24 volts dc.

Step 1. Connect one side of 115 volts ac to pin V of J-3504.

Step 2. Connect other side of 115 volts ac to pin U of J-3504 and check for continuity by connecting Multimeter ME-25A/U between FROM SWR MONITOR and TO ANTENNA terminals of the antenna coupler. Zero ohms indicates continuity between contacts 1 and 4 of switch S-3512.

Step 3. Check for continuity between pins A and B of J-3502. This indicates that switch S-3507 is operating properly.

Step 4. Check for open circuit between pins C and N of J-3502. No reading on the multimeter indicates switch S-3510 is operating properly.

Step 5. Apply 24 volts dc to pin M of J-3502 and the antenna coupler ground terminal, thereby operating relay K-3501. At this point, with 115 volts ac still connected to pin U of J-3504, motor B-3502 should rotate switch S-3512.

Step 6. Check for continuity between TO RF TUNER and FROM SWR MONITOR terminals of the antenna coupler. Zero ohms indicates that contacts 3 and 4 of S-3512 are properly shorted by S-3512 rotor.

Step 7. Check for continuity between pins A and B of J-3502. This checks switch S-3507.

Step 8. Check for continuity between pins C and N of J-3502. This checks switch S-3510.

(3) TROUBLE LOCATION OF THE ANTENNA COUPLER LOADING SECTION, SWITCH ASSEMBLY S-3513, AND SWITCH S-3511.

Power requirements: 115 volts ac.

Note

The following steps to be performed only after step 5 of paragraph 18a(2) has been completed.

Step 1. Connect one side of 115 volts ac to pin V of J-3501.

Step 2. Connect other side of 115 volts ac to pin A of J-3504. Motor B-3501 should actuate rotor of switch S-3511.

Step 3. Connect Multimeter ME-25A/U (or equivalent) between TO ANTENNA and FROM RF TUNER terminals of the antenna coupler. Zero ohms at this point will indicate continuity between contacts 1 and 2 of switch S-3512 and contacts 1A and 2B of switch S-3511.

Step 4. Apply 115 volts ac to pin F of J-3504. Zero ohms, as indicated on the multimeter, shows continuity between contacts 2A, 4A, 6A and 1B of switch S-3511.

Step 5. Apply 115 volts ac to pin E of J-3504. Meter should still show zero ohms. This checks contacts 2B, 4B, 3A, and 1A of switch S-3511.

Step 6. Apply 115 volts ac to pin C of J-3504. The meter should now read infinity (no reading). This checks capacitor C-3501. A meter reading would indicate a possible shorted capacitor, C-3501. At this point disconnect meter lead at FROM RF TUNER terminal and connect instead to the antenna coupler ground. No reading on meter indicates that capacitors C-3502 and C-3503 are not shorted.

Note

Remove meter lead from ground and return to FROM RF TUNER terminal.

Step 7. Apply 115 volts ac to pin D of J-3504. Zero ohms on the meter indicates that contacts 2B, 6B, 1A, and 5A of S-3511 are properly engaged with rotor of S-3511.

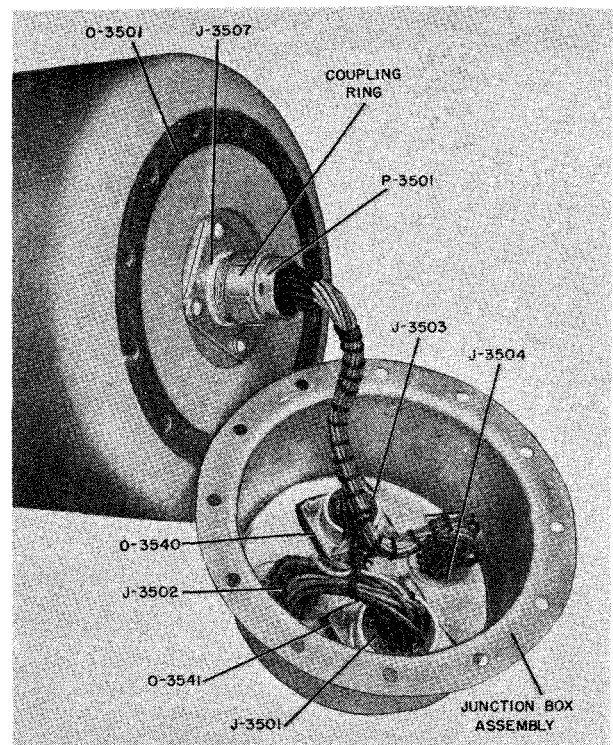


Figure 7-99. Antenna Coupler CU-372/SRT, Junction Box Assembly

Step 8. Apply 115 volts ac to pin B of J-3504. No reading on meter indicates that capacitor C-3501 is not shorted. At this point, contacts 4A, 6A, 1B, 6B, 2A, and 3B are engaged by S-3511 rotors.

b. REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—There are no electrical adjustments in the antenna coupler.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—If the results of the trouble location procedures indicated in paragraph 18a point to a defective component or adjustment in the antenna coupler, the disassembly procedures should be followed step by step.

WARNING

ANTENNA COUPLER CU-372/SRT IS PRESSURIZED WITH PREPURIFIED DRY NITROGEN. IF DISASSEMBLY OF THE UNIT, OTHER THAN THE MOUNTING EQUIPMENT OR THE JUNCTION BOX ASSEMBLY, IS REQUIRED, THE PRESSURE MUST FIRST BE RELEASED. THIS IS ACCOMPLISHED BY PULLING EXHAUST RELIEF VALVE STEM O-3542 (FIGURE 7-97) AND RELEASING THE GAS WITHIN THE UNIT UNTIL PRESSURE GAUGE I-3501 READS ZERO PSI.

CAUTION

The antenna coupler weighs approximately 100 pounds. Provide adequate support when working on the unit. During disassembly, keep the unit away from moisture, dirt or other foreign matter.

1. REMOVAL OF UNIT FROM SHOCK MOUNT BASES.

(See figure 7-97.)

Step 1. Remove all grounding straps and interconnecting cables from the antenna coupler assembly.

Step 2. Remove the 16 screws supporting the four shock mounts to their bases.

CAUTION

Handle the antenna coupler with care so as not to damage any of the components, which protrude from either end of the unit. The unit must be removed from permanent location and brought into a protected work area if complete disassembly is to be performed.

2. REMOVAL OF JUNCTION BOX.

(See figure 7-99.)

Step 1. Remove the 12 screws supporting the ring which clamps the junction box assembly to the housing.

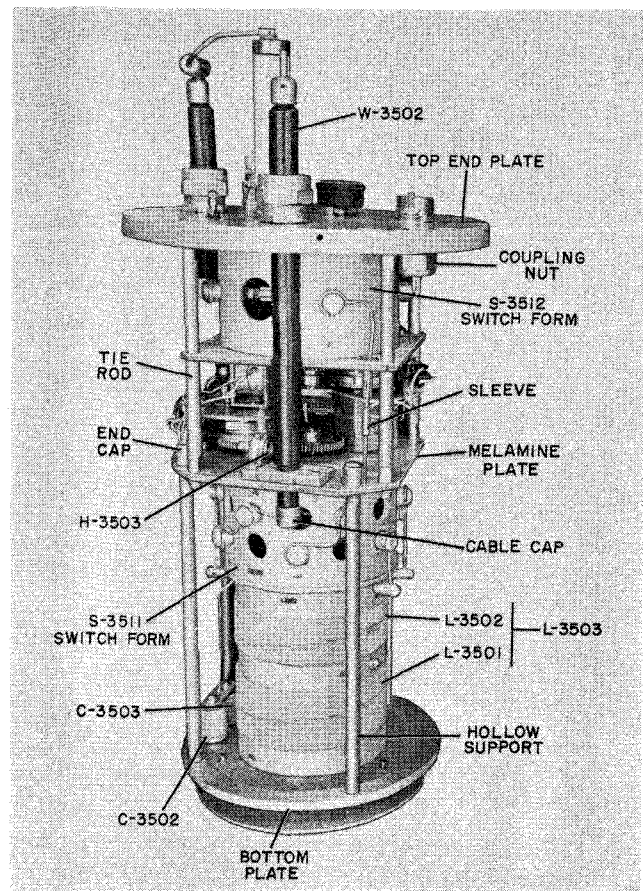


Figure 7-100. Antenna Coupler CU-372/SRT, Less Housing

Step 2. Disconnect plug P-3501 from connector J-3507, mounted on housing, by unscrewing the coupling ring.

Step 3. A circuit check of wiring in the junction box may be accomplished by referring to the wiring diagram, figure 7-171 (sheet 2).

Note

To remove J-3502 or J-3504, the receptacles must be unsoldered from the junction box assembly.

3. REMOVAL OF HOUSING.

(See figure 7-97.)

Step 1. Discharge dry nitrogen gas in the unit by pulling the stem on relief valve O-3542 until pressure gauge I-3501 reads zero. Valves O-3542, O-3543 and pressure gauge I-3501 may be removed by unscrewing them from the top end plate.

Note

Place register marks on both housing and end plate to facilitate reassembly.

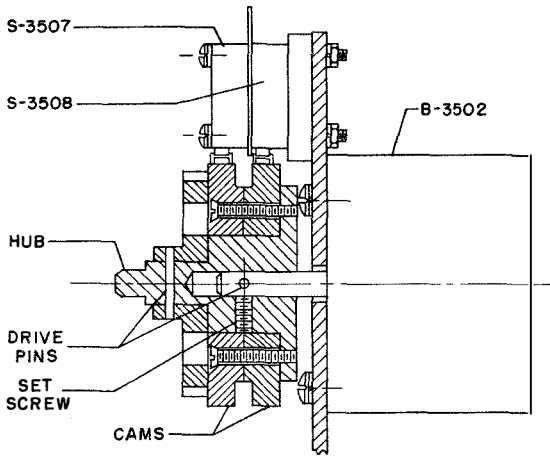


Figure 7-101. Cross Section of S-3514 Assembly

Step 2. Remove the 12 screws supporting the end plate at the top of the unit.

Step 3. The housing and unit may be separated by axially removing one from the other. Note that the housing remains mounted in the shock mount assemblies. At this point the inner components of the antenna coupler are accessible (figure 7-100).

Step 4. Receptacles and terminals may be removed from the top end plate of the unit by unsoldering leads and loosening coupling nut or screws fastening receptacle to end plate. "O" rings, associated with receptacles, may also be removed.

4. REMOVAL OF LOADING SECTION FROM UNIT.

(See figures 7-98 and 7-99.)

Step 1. Unsolder sleeve (figure 7-100) and slide sleeve back on conductor.

Step 2. Loosen cable cap on cable W-3502.

Step 3. Two laced cables, which run from J-3507 through two of the hollow supports to terminal board TB-3501, must be disconnected from the terminal board.

Note

Color coding of wires on both sides of terminal board TB-3501 are identical, thereby facilitating reconnections.

Step 4. Remove the hex nuts on the four tie rods.

CAUTION

The sections should be separated axially; be careful all components clear one another.

5. DISASSEMBLY OF BYPASS SECTION.

—If trouble location procedures indicate trouble with the bypass switch or drive mechanism, a step-by-step disassembly procedure must be followed. Refer to figures 7-98 and 7-100.

Step 1. Separate switch assembly S-3514 and melamine plate from S-3512 switch form by removing the four tie rods supporting the melamine plate.

Step 2. At this point, stator contacts on switch form of S-3512 may be removed and replaced by using the special tool, H-3503, mounted on the unit (figure 7-100). Contact button assemblies may be removed, allowing contact E-3501 or spring O-3502 to be replaced. See contact button assembly detail of figure 7-98.

Step 3. S-3514 assembly may be removed from the melamine plate by removing the screws in S-3514 assembly spacers.

Step 4. Spur gears O-3530 and O-3518 and their associated cams may be removed by knocking out the pins and loosening the setscrews.

Step 5. Switches actuated by the cams and their actuators may be removed by first disconnecting the wires to the switch and then removing the screws supporting the switch to the mounting plate.

Step 6. Relay K-3501 is removed by unsoldering the leads and removing the four screws which mount the relay to the mounting plate.

Step 7. With the spur gear, O-3518, and the cams removed on S-3514 assembly, motor B-3502 may be removed and replaced. The hub, on motor B-3502 shaft, must be removed in order to replace motor B-3502, by knocking out the drive pin (figure 7-101) and loosening the setscrew.

6. DISASSEMBLY OF LOADING SECTION.—If trouble location procedures of paragraph

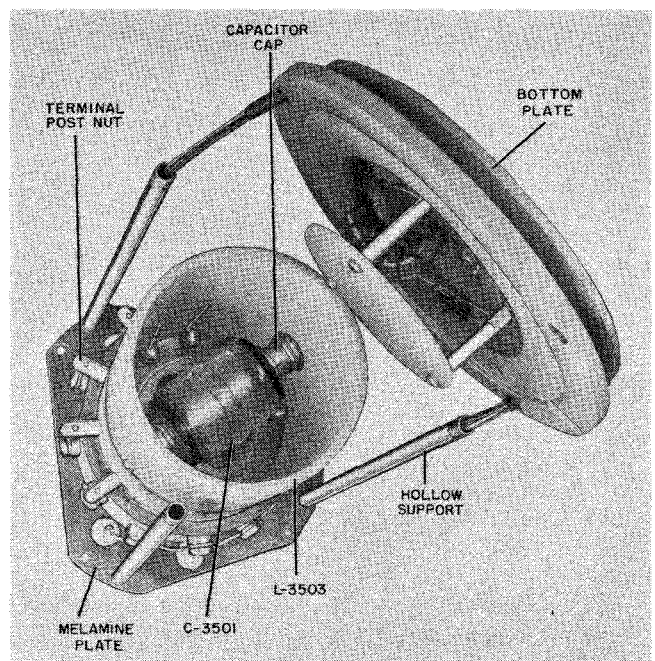


Figure 7-102. Antenna Coupler CU-372/SRT, Loading Section

18a indicate trouble exists in the loading section switch or drive mechanism, a step-by-step disassembly procedure should be followed. Refer to figures 7-98 and 7-100.

Step 1. Separate switch assembly S-3513 and melamine plate from S-3511 switch form by removing the end caps supporting the melamine plate to the four hollow supports.

Step 2. Contact buttons on S-3511 switch form may be removed and replaced by means of the special tool, H-3503, mounted on melamine plate. (See figure 7-100.)

Step 3. Switch assembly S-3513 is removed in the same manner as switch assembly S-3514. (See paragraph 18b(2)(a)5, step 4.)

Step 4. All the components in switch assembly S-3513 and S-3511 switch rotors are removed in the same manner as components in switch assembly S-3514 and S-3512 switch rotor. (See paragraph 18b(2)(a)5, steps 5, 6 and 8.)

7. REMOVAL OF VACUUM CAPACITOR C-3501 AND COIL L-3503.—If trouble location pro-

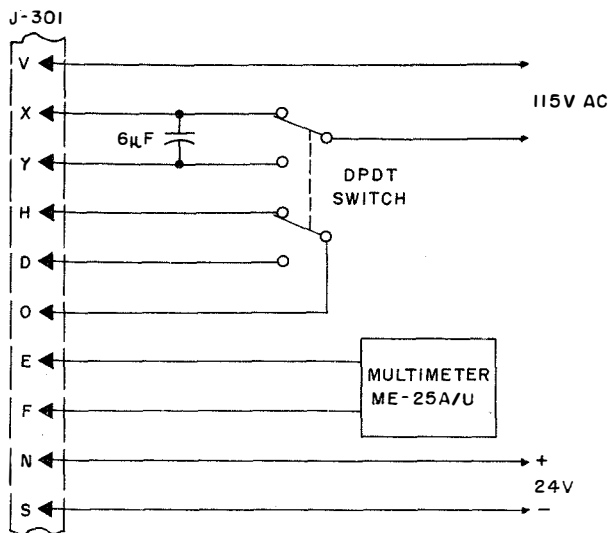


Figure 7-104. R-F Tuner, Test Setup

cedures indicate trouble with vacuum capacitor C-3501 or coil L-3503, a step-by-step disassembly procedure should be followed. (Refer to figures 7-100 and 7-102.)

Step 1. Loosen the end caps, figure 7-100, to allow the four hollow supports to be unthreaded from the bottom plate. The bottom plate and components mounted on it can now be hinged back on the three cables that pass through the hollow supports. (See figure 7-102.)

Step 2. Loosen setscrews on each of the eight terminal post nuts. This allows the coil and vacuum capacitor assembly to be separated from the switch form and melamine plate.

(b) REPLACEMENT AND ADJUSTMENTS.—All replaceable parts, assemblies and subassemblies of the antenna coupler are reassembled and replaced in reverse order from the procedures outlined in paragraph 18b(2) (a). The following general points in reassembly and replacement should be particularly noted:

1. Align register marks inscribed during disassembly procedures.
2. All setscrews, etc., which were fixed with glyptal should have glyptal reapplied to them prior to reassembly.
3. Stake both ends of replaced drive pins.
4. When replacing valves, cable terminals or pressure gauge on the end plate, recoat the threads with sealing compound.
5. If the tape has been removed from W-3501 and W-3502, it must be rewrapped with polyethylene electrical tape.

6. When reassembling or replacing components, refer to Section 6 for lubrication information.

(c) BYPASS SECTION ALIGNMENT.—Proper meshing of spur gears O-3530 and O-3518 is indicated when switches mounted on S-3514 switch as-

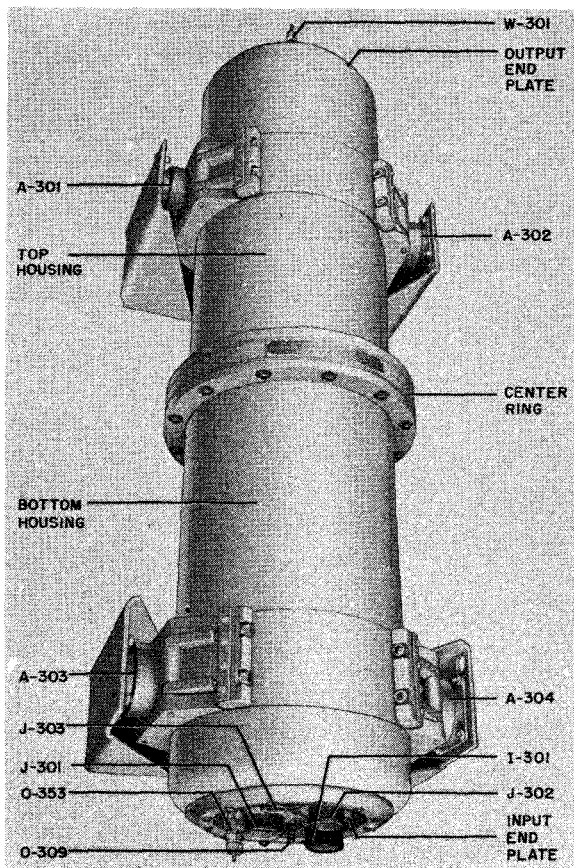
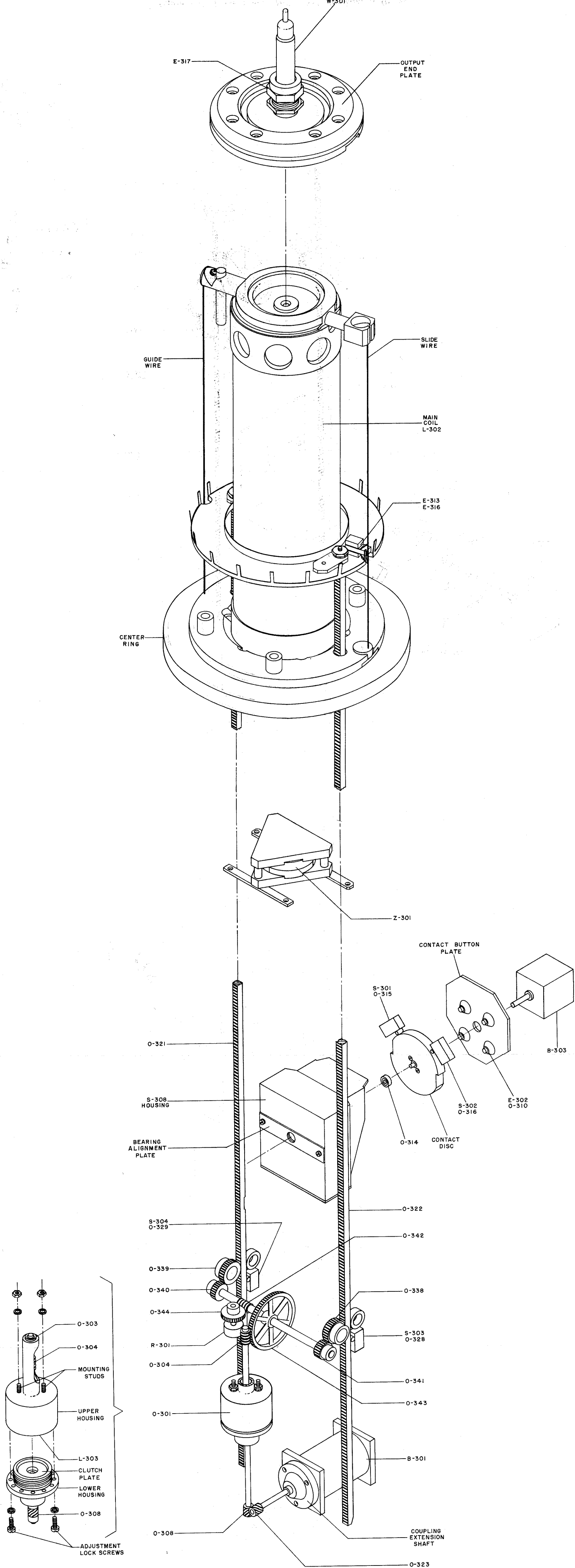


Figure 7-103. R-F Tuner TN-229/SRT, with Housing and Shock Mounts



ORIGINAL

CORRECTIVE
MAINTENANCE

NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A

Section 7

Figure 7-105. R-F Tuner TN-229/SRT, Mechanical Drives

7-119

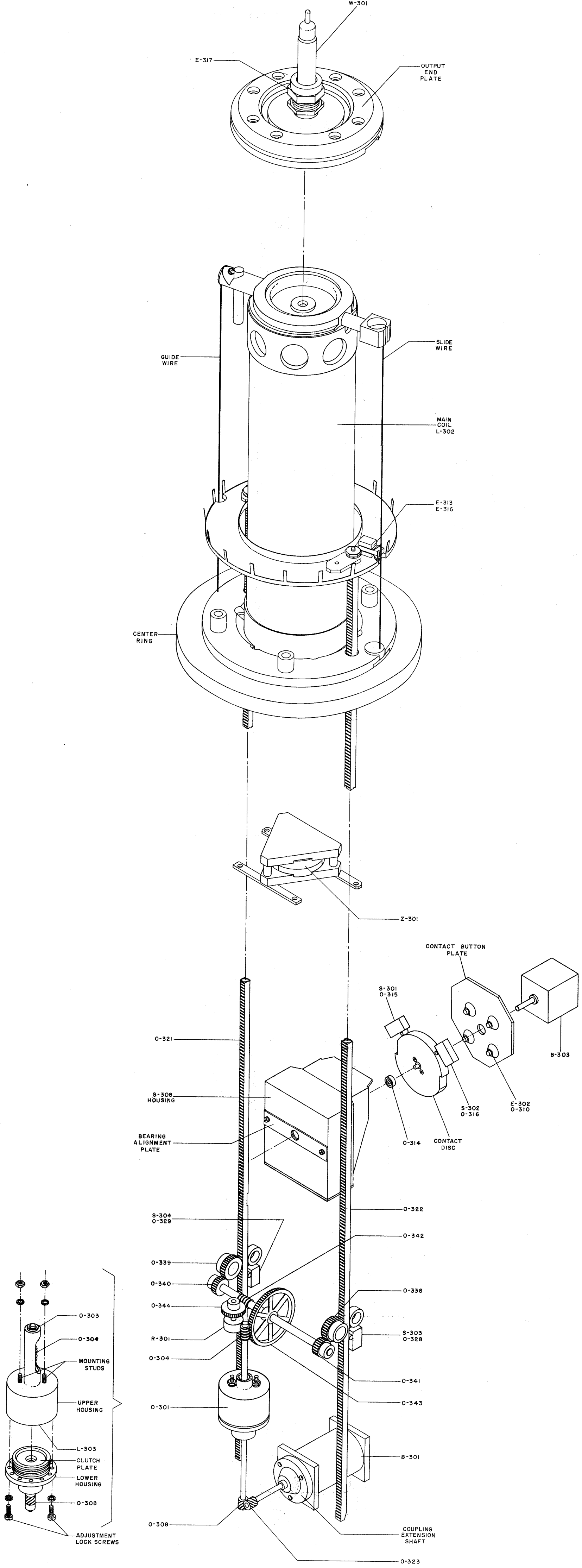


Figure 7-105. R-F Tuner TN-229/SRT, Mechanical Drives

**CORRECTIVE
MAINTENANCE**

**NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A**

**Section 7
Paragraph 18 b (2) (c)**

sembly are as follows: S-3507 and S-3510 actuated, and S-3509 not operated. When cams are in this position, S-3512 switch rotor should be in a position to connect contact buttons 1 and 2 together, and 3 and 4 together. S-3512 rotor contacts should be in exact center of contact button on S-3512 switch form, as observed through holes in switch form.

The cam adjacent to spur gear O-3518 is replaced and adjusted so that the center of the high side of the cam is in position to fully actuate switch S-3510 when switch S-3507 is actuated and switch S-3509 is not operated.

The cam next to O-3518 is installed so that switch S-3507 is actuated when S-3512 rotor is in exact center of contact button on S-3512 switch form.

The cam adjacent to S-3514 assembly mounting plate is installed so that switch S-3509 is not operated when switch S-3510 actuator is in the center of the high side of cam and S-3510 is actuated.

As a final check of proper synchronization of the bypass switch drive mechanism, the antenna coupler should be checked for both electrical and mechanical performance according to the procedures outlined in paragraph 18a.

(d) LOADING SECTION ALIGNMENT.—

Proper alignment of spur gears O-3529 and O-3531 is indicated when cam nearest drive motor B-3501 is in a position where roller actuator of switch S-3506 is fully relaxed and at the lowest part of the notch in the cam. At this position, rotor of switch S-3511A should be engaged in the center of contact buttons 2A, 4A, and 6A and rotor of switch S-3511B should be engaged in the center of contact buttons 1B, 3B, and 5B, as observed through holes in S-3511 switch form.

The cam adjacent to spur gear O-3529 is adjusted so that roller actuator of switch S-3503 is fully relaxed and at the bottom of the notch in the cam when the rotor of switch S-3511A is engaged in the center of contact buttons 1A, 3A, and 5A, and the rotor of switch S-3511B is engaged in the center of contact buttons 2B, 4B, and 6B on S-3511 switch form as observed through holes in S-3511 switch form.

As a final check of proper synchronization of the loading switch drive mechanism, the antenna coupler should be checked for both electrical and mechanical performance according to the procedures outlined in paragraph 18a.

(e) PURGING AND PRESSURIZING.—

After the antenna coupler is completely reassembled, the unit must be purged to eliminate moisture that may have accumulated during corrective maintenance procedures. The following steps are not for routine preventive maintenance where pressurization is required because of normal leakage, but rather for repressurizing when the unit has been opened for repair or adjustment purposes. The following equipment is required:

- Cylinder of prepurified dry nitrogen
- Regulator valve and gauges

Hose with proper fittings to connect needle valve of pressurizing equipment to the antenna coupler intake valve.

Refer to figure 7-109 for a typical pressurization and purging setup.

Step 1. Attach the hose from needle valve (1) to intake valve (2) of the unit to be purged and open cylinder valve (7).

Step 2. Adjust regulator valve (3) to deliver approximately 10 to 15 psi. Note total psi of cylinder at gauge (4).

Step 3. Open exhaust relief valve (5) on the unit by inserting tool in hole provided on the valve stem, pull stem against valve spring tension, and hold it in this position during purging.

Step 4. Purge the unit until the pressure gauge (4) shows a drop of 100 psi from total psi of cylinder noted in step 2.

Step 5. Release the stem on relief valve (5) and allow the prepurified dry nitrogen to enter until gauge (6) on the unit reads 20 psi.

19. RADIO FREQUENCY TUNER TN-229/SRT.

(See figure 7-103.)

a. TROUBLE LOCATION.

(1) GENERAL.—After isolating trouble to the r-f tuner, with the use of the antenna tuning equipment trouble-shooting chart, table 7-41, a further check of the r-f tuner may be performed to localize the trouble to either the main drive and sliding short section or the impedance transformer switch drive, motor B-303.

TABLE 7-41. R-F TUNER TROUBLE LOCATION CHART

| J-301 | | RESISTANCE IN OHMS | PROBABLE SOURCE OF ABNORMAL INDICATIONS |
|-------------|-----------|--------------------------|---|
| FROM PIN | TO PIN | | |
| E | G | 10 K | Position indicator R-301 |
| E | F | * | Position indicator R-301 |
| F | G | * | Position indicator R-301 |
| O | N | 17 | Clutch-brake coil L-303 |
| W | X | 200 | Main drive motor B-301 |
| W | Y | 200 | Main drive motor B-301 |
| X | Y | 400 | Main drive motor B-301 |
| V | U | 300 | Blower motor B-302 |
| V | T | 800 | Blower motor B-302 |
| U | T | 1200 | Blower motor B-302 |
| W | V | 0 | Centrifugal governor S-307 |
| K | L | 0 | Thermostatic switch S-305 Centrifugal switch S-306 |

* Depends upon position of R-301.

A circuit check of the r-f tuner may be accomplished as a bench test by supplying 115 volts ac, and 24 volts dc to actuate the main drive mechanism and switches in the r-f tuner and checking for continuity through switch contacts and coils.

It is not necessary to disassemble the r-f tuner for these preliminary circuit checks. All measurements and connections are made directly at the pins on the receptacles of the r-f tuner assembly.

Refer to the trouble location chart, table 7-41, the schematic, figure 7-172, and the wiring diagram, figure 7-173.

(2) TROUBLE-SHOOTING THE MAIN DRIVE ASSEMBLY OF THE R-F TUNER.—As a preliminary trouble location check of the r-f tuner, use the trouble location chart, table 7-41, to localize probable source of trouble by means of abnormal resistance readings.

The following represents a more detailed method of localizing trouble in the r-f tuner after circuit checks have been made as indicated in table 7-41.

Power requirements: 115 volts ac, 24 volts dc.

Refer to figure 7-104 for test setup schematic, and connect a 6- μ f, 200-vdcw paper capacitor as indicated.

For purposes of a bench test to check main coil L-302 and sliding short assembly, substitute the drive motor phase shift capacitor (mounted in the control-indicator unit) with a 6- μ f, 200-vdcw paper dielectric capacitor across pins X and Y of J-301 (figure 7-104).

Connect a double-pole, double-throw switch, Multimeter ME-25A/U (or equivalent), 115 volts ac and 24 volts dc to the pins on J-301 of the r-f tuner as shown in figure 7-104, r-f tuner test setup diagram.

Operate the DPDT switch; main drive motor B-301 will operate, and the sliding short assembly will travel to the end of coil L-302, causing limit switch to operate, actuating clutch-brake O-301. Reversing the DPDT switch will cause the sliding short assembly to reverse direction. Scanning speed and direction may be checked by observing the pointer movement of Multimeter ME-25A/U. Set multimeter on the proper resistance scale so that position indicator potentiometer R-301 reads from zero to 10,000 ohms.

To check continuity of main coil L-302, connect Multimeter ME-25A/U (or equivalent), using lowest resistance scale, to W-301 and the r-f tuner ground terminal. W-301 is the first extrusion cable at the top of the r-f tuner assembly, figure 7-103.

Note

Zero adjust Multimeter ME-25A/U accurately, as full resistance of coil L-302 is only 0.5 ohm.

Operate the DPDT switch so that the sliding short runs alternately to the top and bottom of L-302, and note deviation in reading of multimeter.

Reading should vary from zero ohms to approximately 0.5 ohm. A large variation of multimeter pointer movement would indicate a possible damaged coil, L-302, or a defective sliding short assembly.

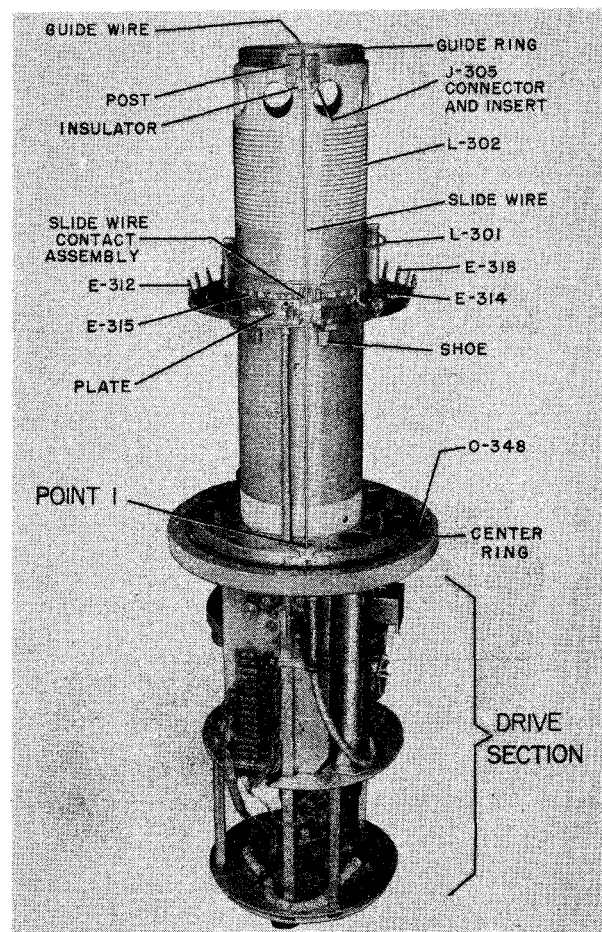


Figure 7-106. R-F Tuner TN-229/SRT, Less Housing

(3) TROUBLE-SHOOTING IMPEDANCE TRANSFORMER SWITCH S-308

(See figure 7-105.)

Step 1. Apply 115 volts ac to pin V of J-301 on r-f tuner.

Step 2. Connect Multimeter ME-25A/U (or equivalent) between J-303 and the first extrusion cable extending from the r-f tuner assembly, W-301. (See figure 7-103.)

Step 3. Apply other side of 115 volts ac to pin M of J-301. This will actuate motor B-303, driving switch S-308. At this point the multimeter should show continuity (zero ohms). This checks main coil L-302, coupling coil L-301 and contacts 2 and 4, of S-308.

Step 4. Disconnect 115 volts ac from pin M of J-301, and connect to pin J of J-301. This will actuate motor B-303, rotating switch S-308. Multimeter should show continuity (zero ohms), between J-303 and r-f tuner ground. This checks contacts 1 and 2 of S-308.

b. REPAIR AND ADJUSTMENT.

(1) ELECTRICAL ADJUSTMENTS.—There are no electrical adjustments in the r-f tuner.

(2) MECHANICAL ADJUSTMENTS.

(a) REMOVAL AND REPAIR.—If the results of the trouble location procedures indicated in paragraph 19a point to a defective component or adjustment in the r-f tuner, the disassembly procedures must be performed in the sequence described. However, in most cases, it will not be necessary to disassemble the unit completely for routine maintenance or replacement of a faulty circuit element. Familiarity with the disassembly procedure will enable the technician to perform the minimum required disassembly to have access to the defective part, since several steps in the procedure may be eliminated. A considerable degree of maintenance may be performed by merely removing the bottom housing from the r-f tuner, which exposes the main drive motor, blower motor, switch drive, clutch-brake assembly, governors, thermostatic switch, terminal boards, position potentiometer, and limit switches (figures 7-107 and 7-108).

If the defective component cannot be reached by removing the bottom housing, the top must then be removed as described in paragraph 19b(2)(a)3. The contact fingers of the shorting ring and slide wire assembly may then be checked, if desired. Impedance transformer Z-301 is accessible when the bottom housing (paragraph 19b(2)(a)2) and drive assembly (paragraph 19b(2)(a)4) are removed from the r-f tuner.

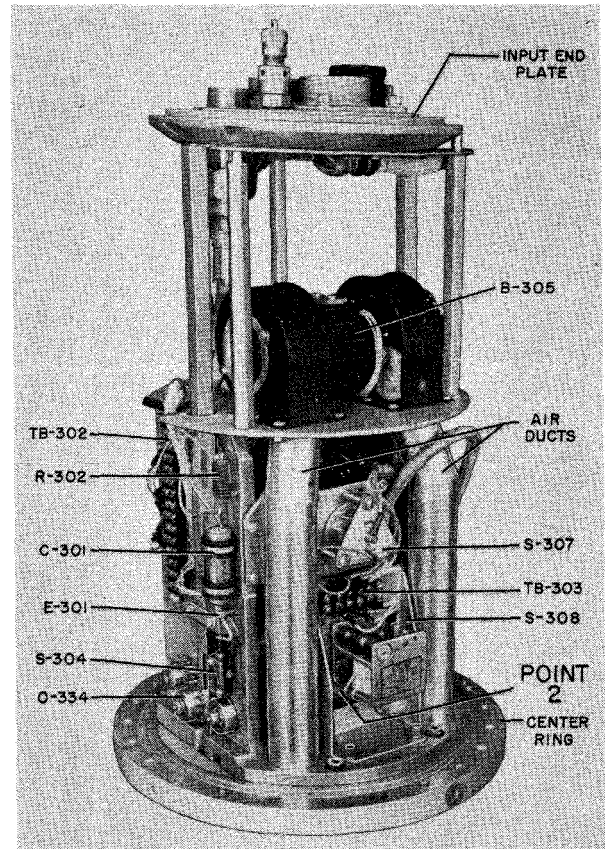


Figure 7-108. R-F Tuner TN-229/SRT, Drive Section, Air Duct Side

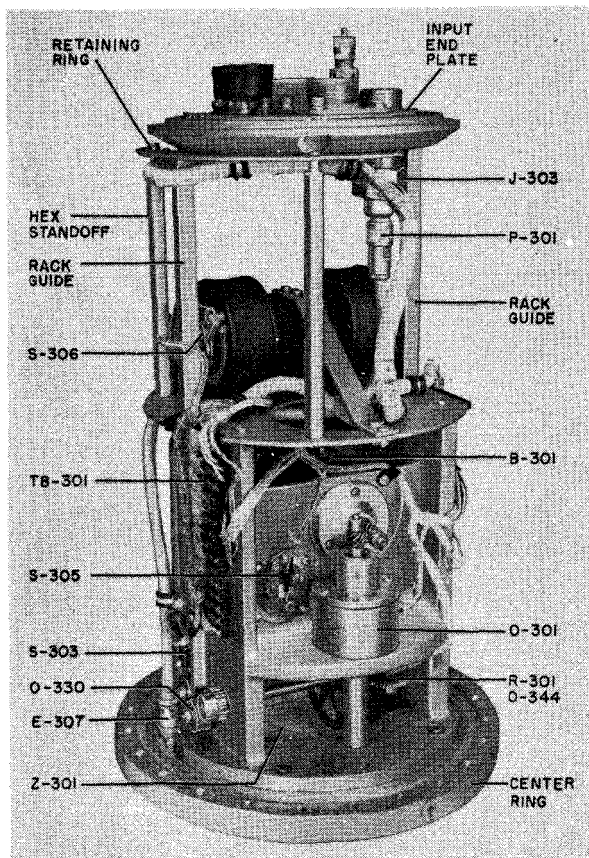


Figure 7-107. R-F Tuner TN-229/SRT, Drive Section, Clutch Side

The r-f tuner trouble location chart, table 7-41, should be consulted to localize the defect to a particular assembly or part. Reference to the input end (bottom) of the r-f tuner indicates the end where the motors and r-f input cable (J-303) are located. The output end (top) is the opposite end where the first extrusion r-f output cable to the antenna coupler is attached. Except for a periodic overhaul for lubrication purposes, it is not necessary to disassemble the r-f tuner beyond the point required for correction of the difficulties indicated during trouble shooting. Every two years it is necessary to overhaul the r-f tuner completely, except for the drive shafts, in order to repack and lubricate the bearings as indicated in Section 6. A special wrench is provided in the r-f tuner for removal of contact buttons in switch assembly S-308.

WARNING

R-F TUNER TN-229/SRT IS PRESSURIZED WITH PREPURIFIED DRY NITROGEN. IF DISASSEMBLY OF THE UNIT, OTHER THAN THE MOUNTING EQUIPMENT, IS REQUIRED, THE PRESSURE MUST FIRST BE RELEASED. THIS IS ACCOMPLISHED BY PULLING THE STEM ON RELIEF VALVE O-353 (FIGURE 7-103) AND RE-

LEASING THE GAS WITHIN THE UNIT
UNTIL THE PRESSURE GAUGE I-301
READS ZERO PSI.

**1. REMOVAL OF UNIT FROM SHOCK
MOUNT BASES.**

(See figure 7-103.)

Step 1. Remove all grounding straps and interconnecting cables from the r-f tuner.

Step 2. Remove the 16 screws supporting the shock mounts to their bases.

Note

The unit must be removed from permanent location and brought into a protected work area if complete disassembly is to be performed. Provide adequate support when working on the unit. During disassembly keep the unit away from moisture, dirt or other foreign matter.

CAUTION

The r-f tuner weighs approximately 135 pounds. Handle with care so as not to damage any of the components which protrude from either end of the unit.

**2. REMOVAL OF INPUT END (BOTTOM)
HOUSING.**

(See figure 7-103.)

Step 1. Discharge dry nitrogen gas in the unit by operating the relief valve O-353 and releasing the gas until pressure gauge I-301 reads zero psi. Valves O-353, O-309 and pressure gauge I-301 may be removed by unscrewing them from the input end plate.

Note

Place register marks on bottom housing, input end plate, and center ring, to facilitate reassembly.

Step 2. Remove the 12 screws supporting the ring which clamps the input end (bottom) housing at the center of the r-f tuner assembly.

Step 3. Remove the 12 screws supporting the input end plate at the bottom of the unit.

Step 4. Bottom housing and unit may be separated by axially removing one from the other. Shock mounts are still mounted on the housing and may be removed at this time, if necessary. At this point, the inner components of the r-f tuner input end are accessible. See figures 7-107 and 7-108.

Step 5. Receptacles may be removed from the input end plate of the unit by removing screws or loosening coupling nut fastening receptacle to the input end plate. "O" rings and gaskets associated with receptacles may also be removed.

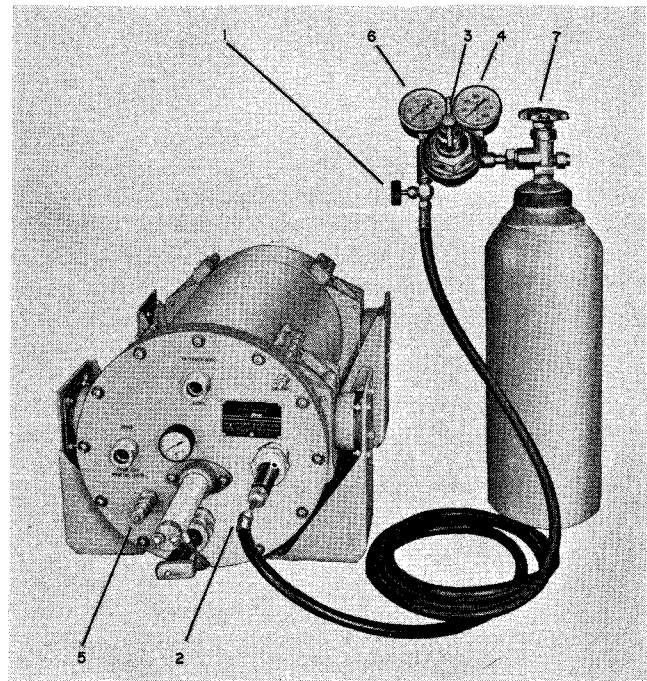


Figure 7-109. Typical Pressurization and Purging Setup

**3. REMOVAL OF OUTPUT END (TOP)
HOUSING.**

(See figure 7-103.)

Step 1. Discharge dry nitrogen gas in the unit by operating relief valve O-353 and releasing the gas until pressure gauge I-301 reads zero psi.

Note

Place register marks on top housing, output end plate and center ring, to facilitate reassembly.

Step 2. Remove the 12 screws supporting the ring which clamps the output end (top) housing at the center of the r-f tuner.

Step 3. Remove the eight screws supporting the output end plate at the top of the unit.

Step 4. Top housing and unit may be separated by axially removing one from the other.

CAUTION

When removing top housing from unit, exercise care so as not to bend any of the contacts on the shorting ring assembly.

Shock mounts are still mounted to housing, and may be removed at this time, if necessary. Removal of the housing will provide access to all the main coil and sliding short assembly components (figure 7-106).

Step 5. The top end plate and the first extrusion connector W-301 may be removed from the unit by pulling the connector from the insert at the top end of the coil form.

4. REMOVAL OF COMPONENTS IN DRIVE SECTION.—The major components of the r-f tuner drive section are mounted within a machined casting, figures 7-107 and 7-108.

If trouble location procedures indicate trouble in the impedance transformer switch assembly or the main coil drive mechanism, a step-by-step disassembly procedure must be followed. For component location, refer to figures 7-106, 7-107, and 7-108.

Components mounted on the machined casting are accessible by removing their mounting screws and disconnecting associated wires.

Main coil drive motor B-301 and impedance transformer Z-301 with switch assembly S-308 are mounted within the drive section casting and must be removed according to the following sequence:

Step 1. The input end plate at the bottom of the unit may be removed by disconnecting the coaxial cable connector to J-303 and removing the three retaining rings supporting the input end plate to the three hex standoffs.

Step 2. Remove screws mounting limit switch S-303 to the casting without removing wires.

Step 3. Remove four screws mounting terminal board TB-301 to the casting. It is not necessary to disconnect wires from terminal boards.

Step 4. Remove four screws supporting thermo-static switch S-305 to the casting.

Step 5. Remove two screws supporting position indicator potentiometer R-301 to the casting.

Step 6. Remove three screws supporting drive motor B-301 extension shaft to the casting.

Step 7. Remove two nuts on threaded studs supporting the clutch-brake assembly O-301 to the casting.

Step 8. Remove four screws mounting terminal board TB-302 to the casting.

Step 9. Remove all cable clamps supporting the wiring harness to the casting.

Step 10. Unsolder wires connected to R-302 and C-301, mounted on the casting, directly above terminal board TB-302.

Step 11. Remove blower assembly, including air ducts and mounting plate, together with the wiring harness from the casting within the r-f tuner drive section.

**5. REMOVAL AND DISASSEMBLY OF
IMPEDANCE TRANSFORMER
SWITCH ASSEMBLY.**

(See figure 7-108.)

Step 1. Unsolder coaxial cable terminated in slide wire insulator, POINT 1 of figure 7-106.

Step 2. Remove nuts and mounting plates supporting racks O-321 and O-322 to the shorting ring assembly.

Step 3. Remove four screws supporting the drive section casting to the center ring of the r-f tuner.

Step 4. Remove six screws supporting the main coil and shorting ring assembly to the center ring of the r-f tuner.

Step 5. Remove main coil and shorting ring assembly from the drive section of the r-f tuner.

CAUTION

Before separating the center ring from the drive section, register marks must be placed on the center ring and drive section casting. The center ring must be properly oriented when unit is reassembled.

Step 6. Remove four screws from bracket supporting the impedance switch assembly to the casting.

Step 7. Unsolder leads between impedance transformer Z-301 and contact buttons of switch S-308; see POINT 2 on figure 7-108. Remove assembly from casting.

Step 8. Impedance switch assembly housing is removed by removing the three screws on the top supporting the housing to the bracket and three screws on the bottom supporting the housing and bearing alignment plate (figure 7-105).

Step 9. Switches actuated by the cam and their actuators may be removed by first disconnecting the wires to the switch and then removing the screws supporting the switch to the mounting plate (figure 7-105).

Step 10. The cam may be removed by unscrewing the two flathead screws supporting the cam to the motor shaft (figure 7-105).

CAUTION

Place register marks on cam and motor shaft for proper orientation when replacing cam on motor B-303 shaft.

Step 11. At this point, the stator contacts on melamine plate may be removed and replaced by using the special tool, H-302, mounted within the r-f tuner.

Step 12. To gain access to motor B-303 mounting screws, remove melamine plate and unsolder leads between S-308 contacts and coaxial connectors on assembly.

Step 13. Remove four screws supporting motor B-303 to the assembly.

Step 14. Impedance transformer Z-301 may be removed by removing the four screws on the bracket supporting the transformer to the casting.

6. REMOVAL OF SHORTING RING
ASSEMBLY.*(See figures 7-105 and 7-106.)*

Step 1. Remove slide wire and guide wire by loosening nuts at the insulator post and guide ring assembly.

Step 2. To remove guide ring assembly, remove two screws supporting ring to the coil form.

Step 3. Unsolder connection between the top of the coil and the output connector, W-301, at the top of the unit.

Step 4. Shorting ring and coil may be separated by axially removing shorting ring from the top end of the coil form.

(b) REPLACEMENT AND ADJUSTMENTS.

—All replaceable parts, subassemblies, and assemblies of the r-f tuner are reassembled and replaced in reverse order from the procedures outlined in paragraph 19b(2)(a). The following general points in reassembly and replacement should be particularly noted:

Step 1. Align register marks inscribed during disassembly procedures.

Step 2. All setscrews, etc., which were fixed with glyptal should have glyptal reapplied to them prior to reassembly.

Step 3. Stake both ends of replaced drive pins.

Step 4. When replacing cable terminals, valves or pressure gauge on the end plate, recoat the threads with sealing compound.

Step 5. When reassembling or replacing components, reference should be made to Section 6 for lubrication information.

Step 6. Wherever registry marks have been placed, according to disassembly instructions, care must be exercised when replacing to line up register marks for proper orientation of component.

1. CLUTCH-BRAKE UNIT ADJUSTMENT.

—When the r-f tuner is disassembled for overhaul and lubrication purposes, clutch-brake unit O-301 should be checked and adjusted to maintain an air gap of 0.008 inch. The function of the brake in the clutch-brake unit is to prevent overtravel of the shorting ring when releasing either the UP **AF** or DOWN **AG** button on the control-indicator unit. Braking time is a function of air gap existing between the driver plate and the braking face of the brake winding housing (see detail in figure 7-105).

Air gap within the clutch-brake unit is adjusted by rotating the lower housing within the upper housing of the unit. Each position of the locking hole in the lower housing represents air gap adjustments in increments of 0.004 inch, and two sets of locking screw tapped holes in upper housing permit 0.002-inch adjustments.

Step 1. Remove locking screws supporting lower housing to upper housing.

Step 2. With clutch-brake unit removed from casting (paragraph 19b(2)(a)5, steps 6 and 7), unscrew lower housing completely from upper housing. Remove any dirt or other foreign matter that may have accumulated on the clutch and brake mating surfaces. Use dry cleaning solvent P-S-661b, Type II. After cleaning, replace lower housing by screwing it in the upper housing.

Step 3. Rotate lower housing clockwise until it reaches its limit. At this point there is zero air gap between driven and driving plates.

Step 4. Rotate lower housing counterclockwise for 0.008-inch air gap (two holes in lower housing), and replace locking screws.

2. CONTACTS, BEARINGS AND GASKETS.—If either main coil L-302 or coupling coil L-301 is damaged, rewinding of the coils will be necessary. Refer to table 7-43, Winding Data.

Inspect the contacts on the shorting ring assembly to be sure they make firm contact with main coil L-302 and the top housing when assembled. All shorting ring contacts and the inner surface of the top housing should be cleaned prior to reassembly.

The slide wire contact assembly should be adjusted to provide firm contact against the slide wire. The slide wire lock nut on the guide ring post should be tightened firmly.

Clean all gears, racks, rollers, and bearings, and lubricate in accordance with the lubrication instructions and materials specified in Section 6.

Check shorting ring assembly over the entire range of travel. Binding may indicate improper alignment of shorting sleeve or racks.

Replace any gaskets or "O" rings that appear worn or cracked.

CAUTION

Exercise care not to pinch or shear gaskets and "O" rings when reassembling the r-f tuner.

Ball bearings may be removed, when located on a shaft, by applying pressure on their inner races. When located in holes, they may be removed by pressing on their outer races.

3. PURGING AND PRESSURIZING.—After the r-f tuner is completely reassembled, the unit must be purged to eliminate moisture that may have accumulated during corrective maintenance procedures. The following steps are not for routine preventive maintenance, where pressurization is necessary because of normal leakage, but rather for repressurizing when the unit has been opened for repair or adjustment purposes. The following equipment is required:

Cylinder of prepurified dry nitrogen; regulator valve and gauges; hose with proper fittings to connect needle valve of pressurizing equipment of the r-f tuner intake valve.

Refer to figure 7-109 for a typical pressurization and purging setup.

Step 1. Attach hose from needle valve (1) to intake valve (2) of unit to be purged, and open cylinder valve (7).

Step 2. Adjust regulator valve (3) to deliver approximately 10 to 15 psi. Note total psi of cylinder at gauge (4).

Step 3. Open exhaust relief valve (5) on unit by inserting tool in hole provided on the valve stem, pull stem against valve spring tension, and hold it in this position during purging.

Step 4. Purge unit until pressure gauge (4) shows a drop of 100 psi from total psi of cylinder noted in step 2.

Step 5. Release stem on relief valve (5) and allow the prepurified dry nitrogen to enter until gauge (6) on unit reads 20 psi. (Increase regulator valve (3) output to provide 20 psi in r-f tuner as indicated by gauge (6) on unit.)

20. MAINTENANCE OF RELAYS.

Relay contacts must be kept in good condition to maintain satisfactory operation. Dust and pitted contacts are the principal causes of relay trouble. The presence of undue sparking between contacts is an indication of trouble. Burnishing and cleaning of the contacts will usually clear up most relay troubles.

a. CONTACT BURNISHING.—Contact burnishing should always be done with a suitable burnishing tool. *Never use a file.* To burnish, rub the burnisher back and forth between the contacts two or three times. When burnishing normally open contacts, press the contacts together manually to give a slight pressure on the blade of the burnisher; for normally closed contacts, the spring tension will provide sufficient pressure.

CAUTION

When burnishing contacts, take care not to jar the springs out of adjustment or to change the air gaps. Also take care not to lose the bushing between contact arms.

b. CONTACT CLEANING.—Relay contacts should be cleaned with dry cleaning solvent P-S-661b, type II, in the following manner: dip the flat end of a clean toothpick in the cleaning solvent to a depth of one-quarter inch, and deposit the liquid on the contacts while holding the contacts slightly separated. Rub the flat end of the toothpick back and forth two or three times between the contacts, while exerting a slight pressure against the sides of the toothpick. The liquid will soften any deposit that may have collected on the contacts, and the rubbing will remove it. The contacts

should now be flushed with a small amount of cleaning solvent taken up on the clean point of the toothpick. The end of the toothpick used for rubbing should not be used during this operation. Flush the sides as well as the top of the contacts, to prevent the deposit of loosened dirt upon the contact surface.

Note

On a relay where the separation or location of the contacts is such that it is not practicable to insert a toothpick, burnishing alone will be satisfactory.

21. COMPONENT CHARACTERISTICS.

a. ELECTRON TUBES.—Table 7-42 lists the rated tube characteristics for all types of vacuum tubes used in the AN/SRT-15. This data does not represent maximum or recommended operating conditions, but represents the conditions under which the tube is tested to determine whether or not it is satisfactory after manufacture. After longer service, tubes will show substantial reduction (up to 20 percent) in transconductance and emission under the standard test conditions. By making an allowance for normal decrease in transconductance or emission, and normal increase in gas rectifier cathode-anode drop, tubes with excessively low performance levels may be detected.

Note

All tubes of a given type supplied with the equipment shall be consumed prior to employment of tubes from general stock.

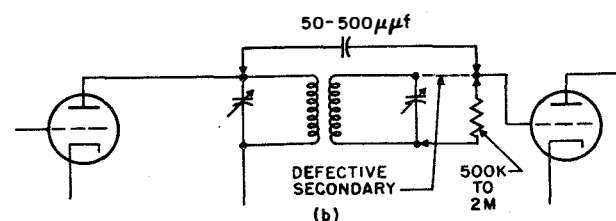
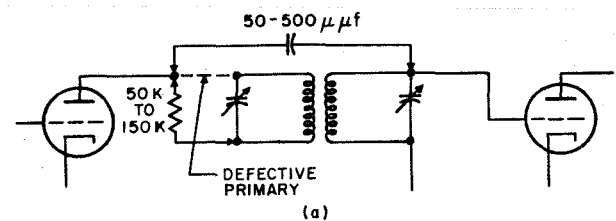


Figure 7-110. Bridging Defective Transformer Winding

7-128

TABLE 7-42. TUBE CHARACTERISTICS

| TUBE TYPE | FILAMENT VOLTAGE (V) | FILAMENT CURRENT (A) | PLATE VOLTAGE (V) | GRID BIAS (V) | SCREEN VOLTAGE (V) | PLATE CURRENT (MA) | SCREEN CURRENT (MA) | A-C PLATE RESISTANCE (OHMS) | VOLTAGE AMPLIFICATION FACTOR (MU) | TRANSCONDUCTANCE (MICROMHOS) | | EMISSION | | |
|-----------|----------------------|----------------------|--|-------------------------|--------------------|---|---------------------|--|--|--|---------|--|-----------|------|
| | | | | | | | | | | Normal | Minimum | I _s (MA) | Test Volt | |
| 0A2 | — | — | Anode supply: 185 V dc MIN. | | | | | | | Starting voltage: 185 V dc min. Operating voltage: 150 V dc approx. | | Operating 5 ma min. current: 30 ma max. | | |
| 0B2 | — | — | Anode supply: 133 V dc min. | | | | | | | Starting voltage: 133 V dc min. Operating voltage: 108 V dc approx. | | Operating 5 ma min. current: 30 ma max. | | |
| 3B28 | 2.5 | 5 | Peak inverse voltage: Output current: 250 ma max. 11 KV max/anode current of 1 A max. | | | | | | | | | | 5000 | 14.0 |
| 4-400A | 5.0 | 14.1 | 2500 | -67.5 | 500 | 160 | | | 5.25 | | | 7000 min. | 2500 | |
| 4D21 | 5.0 | 6.5 | 2500 | -71.5 | 500 | 50 | | | 5.85 | | | 4000 min. | 2500 | |
| 5R4WGB | 5.0 | 2 | Plate voltage: 850 V ac* Output current: 140 ma dc min. | | | | | | Peak inverse voltage: 2800 V max. | | | 225* | 75* | |
| 6AG5 | 6.3 | 0.3 | 250 | 0 | 150 | 7 | 2 | 800,000 | | 5000 | 4000 | 25 min. | 10 | |
| 6AG7 | 6.3 | 0.65 | 300 | -3 | 150 | 30 | 6.5 | 130,000 | | 1700 | 9200 | 180 min. | 20 | |
| 6AK6 | 6.3 | 0.15 | 180 | -9 | 180 | 15 | 2.5 | 200,000 | | 2250 | 1900 | | | |
| 6AS7G | 6.3 | 2.5 | 135* | 0* | | 125* | | 280 | 2* | 7000* | 5800* | 75* | 10* | |
| 6E5 | 6.3 | 0.3 | 250 | -4 | | 5.3 | | Target voltage: 250 V dc max. Target current: 3.1 ma dc | | | | 15 min. | 30 | |
| 12AU7 | 12.6 | 0.15 | 250* | -8.5* | | 10.5* | | 7700 | 17* | 2200* | 1750* | | | |
| 5651 | | | Starting voltage: 115 V dc min. Operating voltage: 87 V dc approx. | | | | | | Operating current: 1.5 ma (min.) to 3.5 ma (max.) | | | | | |
| 5654 | 6.3 | 0.175 | 120 | -2 | 120 | 7.5 | 2.5 | 340,000 | | 5000 | 3750 | | | |
| 5687 | 6.3 | 0.9 | 120* | -2 | | 34 | | 2000 | 20* | 11000 | 8000 | 125 min. | 15 | |
| 5725 | 6.3 | 0.175 | 120 | -2 | 120 | 5.2 | 3.5 | | | 3200 | 2500 | | | |
| 5726 | 6.3 | 0.3 | Plate voltage 117 V ac* | | | Peak inverse voltage: 260 V max. Output current: 9 ma dc max.* | | | | | | | 40* | 10* |
| 5751 | 12.6 | 0.175 | 250* | -3* | | 1.1 | | 58,000 | 70* | 1200 | 900 | | | |
| 5814 | 12.6 | 0.175 | 250* | -8.5* | | 10.5* | | 6250 | 19.5* | 2200* | 1750* | | | |
| 5933 | 6.3 | 0.9 | 750 | -32 | 300 | 60 | 5 | | | | | | | |
| 6201 | 6.3 | 0.3 | 250 | 200 ohms R _k | | 10 | | 10,900 | 60 | 5500 | | | | |

* Each section.

ORIGINAL

NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16ACORRECTIVE
MAINTENANCE

7 Section

b. CRYSTAL DATA.—Radio Frequency Oscillator Z-2001 (crystal oscillator, unit 1) is a crystal-controlled oscillator. A schematic of the crystal oscillator circuit is shown in figure 7-93. Following are the characteristics of the crystal and its oven:

Crystal oscillator frequency 100 kc
 Combined accuracy and stability of crystal and oven over ambient temperature range of -20°C. (-4°F.) to 65°C. (149°F.) (and 30% to 95% relative humidity) is within 0.0005%.

Oven operating temperature 70°C. (158°F.)
 Oscillator accuracy 0.00011%

Oven dimensions
 Overall height 4-5/8 inches
 Overall diameter 3-3/4 inches

Diameters of oven pins
 Pins 2, 3, 4, 5, and 6 0.125 inch
 Pins 1 and 7 0.156 inch

c. WINDING DATA.—Table 7-43 lists all the wire-wound electrical components except resistors, in the AN/SRT-15, and pertinent data to permit emergency repair of them in the field. The diagrams, listed by number in the "Diagram" column of table 7-43, follow the table and start on page 7-156. At the bottom of each page of table 7-43 a footnote references the page or pages on which the diagrams appear.

d. EMERGENCY MEASURES.—There may be occasions when a technician or operator must resort to emergency measures to keep the equipment in operation. A few such methods are described in the following paragraphs.

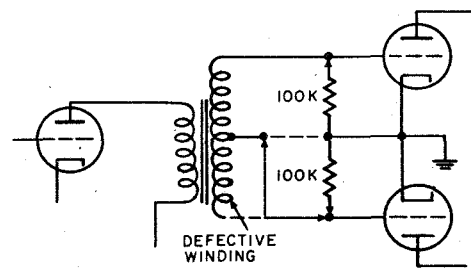


Figure 7-112. Emergency Repair of Audio Transformer

Some of the procedures described may require a certain amount of "cut-and-try". It must be borne in mind, too, that parts which are repaired or bridged must be replaced as soon as possible to restore complete normal functioning of the equipment.

Note

Operators should not resort to these measures unless authorized.

(1) TRANSFORMER WINDINGS. (See figures 7-110 and 7-111.)—The simplified schematics of figures 7-110 and 7-111 illustrate two methods of emergency repair which may be tried when a transformer winding opens or burns out. Figure 7-110 shows a method which may be used when capacitors are available.

The resistor used in a defective primary may be a value between 50,000 and 150,000 ohms; in a defective secondary the resistor value may range from 500,000 to 2 megohms.

For audio frequencies, the capacitor value may be 0.1 to 0.5 μ f.

In figure 7-111, a method of bridging is shown when a capacitor is not available. A few turns of insulated wire are placed around the undamaged winding and then connected to the plate or grid, as applicable. Some adjustment may be required to give the desired coupling.

(2) AUDIO TRANSFORMERS. (See figure 7-112.)—A tapped audio transformer may be temporarily repaired by placing two resistors of equal value in the secondary, as illustrated.

(3) BRIDGING DEFECTIVE STAGE. (See figure 7-113.)—When the procedures described in the two preceding paragraphs do not produce satisfactory results, it is possible to bridge an entire stage. This method is shown in figure 7-113.

(4) FIXED RESISTORS.—The value of a carbon resistor will decrease when overheated. Should this condition become permanent, the resistor value may be increased by scraping or filing the resistor until the approximate value is obtained. Use care in filing and scraping, and keep a constant check on the changing value. Be sure the removal of insulation does not cause a short.

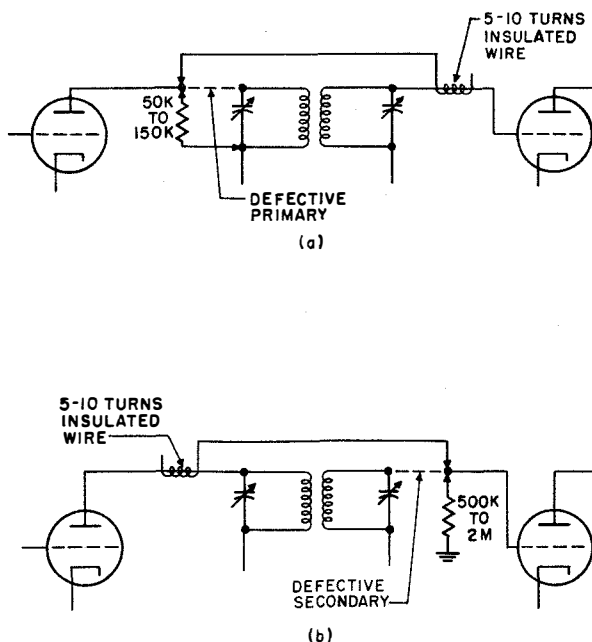


Figure 7-111. Alternate Method of Bridging Transformer Windings

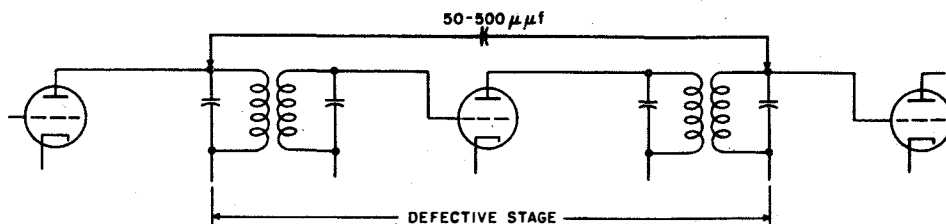


Figure 7-113. Bypassing a Defective Stage

Wire-wound resistors may be repaired, temporarily, by clamping the broken spot or bridging it with solder or wire. Although the overall value will be somewhat less than the original, circuit function should be restored.

(5) VARIABLE RESISTORS.—Faulty operation of variable resistors and potentiometers is usually caused by poor contact, wear and dirt.

The part is cleaned with dry-cleaning solvent 14F SNSN G51-S-4718-10, and then polished with an ordinary pencil eraser, preferably one not too gritty. Carefully adjust the tension of the moving arm, if necessary, to get a better contact.

When a variable resistor is too badly worn to repair, a fixed resistor should be substituted. This resistor is finally chosen after different values are tried in the circuit. The resistor that gives the best results under these emergency conditions should be the one used.

A wire-wound variable resistor may be repaired by slipping a metal tab under or over the break or by clamping. In this case, too, the value will be somewhat lower but circuit function should be restored.

(6) CHOKES AND COILS.—When a coil or choke becomes useless through corrosion, or if repair or bridging is impractical, it may be rewound.

Remove the wire on the coil form, carefully noting the number of turns and the manner of winding. Rewind with new wire of the same size and insulation on the old coil form. Table 7-43 may be consulted in cases where no emergency exists.

(7) TUBES.—In some cases, a stage may be bridged, as described in paragraph 3e(3), if a tube replacement is not immediately available.

Power amplifier tube V-1304 (4-400A) in the radio frequency amplifier output stage may be replaced with

a type 5D21, if available, provided operation is limited to the 100-watt level.

(8) INTERLOCK BATTLE SHORT. (See figure 7-79.)—In case of failure of the drawer interlocks, INTERLOCK BATTLE SHORT switch Ⓢ is provided on the front panel of Low Voltage Power Supply PP-1094 /SRT (LVPS). When placed in the ON position, it bypasses all the interlock switches on the drawers.

Note

INTERLOCK BATTLE SHORT switch Ⓢ is to be used only in emergencies.

(9) R-F TUNER EMERGENCY SWITCHES.—Although there is no interlock in the r-f tuner, two switches are provided to prevent operation of the equipment at 500 watts under the following conditions:

(a) CENTRIFUGAL SWITCH.—If, for some reason, r-f tuner blower motor B-302 fails, its centrifugal switch S-306 will open and prevent 500-watt operation.

(b) THERMAL SWITCH.—When the temperature in the r-f tuner rises to 150° - 115°C. (200° - 240° F.), thermal switch S-305 will open and prevent 50-watt operation.

These safeguards are provided in the r-f tuner at the high (500-watt) level while still not preventing operation at the low (100-watt) level.

(10) CHEATERS.—With a drawer partially pulled out of its inner compartment, the interlock may be bypassed through the "cheater" switch mounted on the left side of the chassis, towards the rear. The hard-rubber rod of the switch is pushed in to close the circuit.

TABLE 7-43. WINDING DATA

| | | |
|---|---|--|
| <p>1. All wires are AWG copper wire unless otherwise specified.</p> <p>2. In "wire size" column, E = enamel F = fiber, synthetic R = resin Formex = synthetic resin (brand) CSC = cotton, single covered SSC = silk, single covered</p> <p>3. In "DC resistance" column, Low = less than one ohm. IMPREGNATION: MOISTURE AND FUNGUS PROOFING OF COILS.</p> <p style="text-align: center;">Note</p> <p>All varnish shall be moisture and fungus resistant per MIL-V-173A.</p> <p>To obtain an even coating, dipping and draining of parts should be done in opposite directions. After the treatment is complete, the coating must be dry and hard on all portions of the coil and form; all surfaces must be free of bubbles, foreign matter and dents.</p> <p style="text-align: center;">METHOD I</p> <p>Perform the sequence of operations as called for in the winding data.</p> <ol style="list-style-type: none"> Clean all surfaces of coil form with dry cleaning solvent (P-S-661b, TYPE II). Bake for 1/2 hour at 100°C (212°F). Remove from oven and allow to cool at room temperature. Wind coil. Bake for 1 hour at 100°C (212°F). Remove from oven and allow to cool to 55°-66°C (130°-150°F). Immerse in mixed varnish. Air dry for 10 minutes. Bake for 1 hour at 100°C (212°F). Allow to cool to 55°-66°C (130°-150°F). | <p style="text-align: center;">GENERAL NOTES</p> <ol style="list-style-type: none"> Brush on mixed varnish. Air dry for 10 minutes after brushing. Bake for 1 hour at 100°C (212°F). Allow to cool to 55°-66°C (130°-150°F). Brush on unmixed varnish. Air dry for 10 minutes after brushing. Bake for 1 hour at 100°C (212°F). Immerse in mixed varnish in vacuum. Air dry for 10 minutes. Bake for 8 hours at 100°C (212°F). Allow to cool to 55°-66°C (130°-150°F). Unmixed varnish shall be Insl-X #U-86-T varnish. Mixed varnish shall be a mixture of 100 parts Insl-X #U-86-T varnish to 86 parts thinner #80. <p style="text-align: center;">METHOD II</p> <ol style="list-style-type: none"> Remove oil and grease with dry cleaning solvent (P-S-661b, TYPE II). Dry in oven or with infrared light at 100°C (212°F) long enough to substantially dehydrate the material (not less than two hours). Allow to cool to +60°C (140°F). Spray, brush, or dip (depending on the size and shape of the piece), using one of the following baking varnishes: Insl-X #95T Insl-X #85T Insl-X #85-IT Mass & Waldstein Durad #524 Dry in air for 10 minutes. Bake in 100°C (212°F) for a maximum of 30 minutes. Allow to cool to +60°C (140°F). Repeat step 4. Dry in air for 10 minutes. Bake at 100°C (212°F) for a minimum of 1 hour. | <p>NOTE 1: Insl-X No. 95T, as sold commercially, has a 43% solid content. To obtain the required 25% mixture add 0.86 part thinner.</p> <p>NOTE 2: Phenolic parts which require no additional assembly shall be treated with #95T. Parts which are subjected to assembly of metal parts, such as eyelets, rivets, screws, etc., shall be treated with #85T or #85-IT.</p> <p>NOTE 3: When the coating material is at the proper specified viscosity, <i>each</i> coat should be from 1 to 1.5 mils thick.</p> <p style="text-align: center;">METHOD III</p> <p>Oven temperature for following procedures shall be 70°-100°C (158°-212°F).</p> <ol style="list-style-type: none"> After winding, bake 2 hours. Apply a coat of varnish to the hot coil, thinned 3 parts of varnish to 1 part Xylol. Air dry at least 30 minutes, and bake in oven at least 1 hour. While coil is hot, apply second coat, full strength; air dry at least 15 minutes and bake at least 1 hour. Varnish to be applied liberally to all accessible surfaces of wire (and other portions as specified) for both coats. <p style="text-align: center;">METHOD IV</p> <ol style="list-style-type: none"> Place in oven for 2 hours at 150°C (300°F)* to dry. Let cool at room temperature for approximately 15 minutes. Vacuum impregnate in Dow-Corning #996 varnish or equivalent. Place in oven for 4 hours at 150°C (300°F)*. Repeat steps 3 and 4 two more times, but dip instead of impregnate. |
|---|---|--|

* For L-1333, dry at 100°C (212°F).

TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPEDANCE RATIO | HIPOT A-C VOLTS | REMARKS | |
|--------------------|----------------|-----------|---|---|---------------|-----------------------|-----------------|--|---|--|
| L-301 | D-2010915 | (1) | Single winding, single layer. | RADIO FREQUENCY TUNER TN-229/SRT | | | | | | RF coil: max ID 7-1/16 in., min. IC 6-1/4 in., ID of coil to vary according to diagram. |
| | | | | 0.144 in. dia silver clad copper wire half hard | 1 | | | | | |
| L-302 | D-2010768 | (2) | Single winding, single layer. Threaded silicone bonded fiberglass form. | 0.064 in. dia silver clad copper wire 4 nos. hard | 141.875 | | | | RF coil. | |
| L-303 | A-2010642 | (3) | Single winding, multi-layer wound; core cold rolled steel. | | 900 | 15.7 | | | Electromagnet: 24 V dc, 3.3 amp. | |
| Z-301 | B-2011212 | (4) | Single winding, toroidal core of Allegheny Mumetal hydrogen annealed. | 0.0125 in. thk soft copper strip silver pl, 29 in. lg tapered from 1/2 in. to 1/4 in. | 7 tapped at 6 | | | | Impedance transformer: 0.3 mc to 2 mc; turns insulated by fiberglass tape. | |
| L-501 | NL-980824-1 | (5) | Single winding, single layer. | POWER SUPPLY PP-1095/SRT | | | | | 2250 V. rms insulated for 875 volts inst. | Filter choke, smoothing; inductance 3 hy at 414 ma; 120 cps $\pm 5\%$. Hermetically sealed. |
| | | | | #25F | 1560 | 35 | | | | |
| L-502 | NL-980823-1 | (5) | Single winding, single layer. | #24F | 2000 | 40 | | 2250 V. rms insulated for 875 volts inst. | Filter choke, swinging; inductance 3 to 15 hy at 414 to 50 ma; 120 cps $\pm 5\%$. Hermetically sealed. | |
| L-503 | NL-980851-1 | (5) | Single winding, single layer. | #29F | 2450 | 125 | | 5200 V. rms insulated for 3000 volts inst. | Filter choke, smoothing; inductance 8 hy at 230 ma; 120 cps $\pm 5\%$. Hermetically sealed. | |
| L-504 | NL-980850-1 | (5) | Single winding, single layer. | #28F | 2750 | 140 | | 5200 V. rms insulated for 3000 volts inst. | Filter choke, swinging; inductance 40 to 8 hy at 230 to 50 ma; 100-120 cps. Hermetically sealed. | |

* For diagrams (1) through (5), see page 7-156.

TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPED-ANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|--------------------|----------------|-----------|--|--------------------------------------|--|---------------------------------|------------------|--|---|
| T-501 | NL-980846-1 | (6) | Primary (1-2) Secondary (3-5) | #13F #23F | 150 1720 ct at 860 | Low 29 | | 1500 V. rms Pri. 2300 V. rms Sec. | Power transformer plate type: rated at 360 VA. Terminals 1 and 2: 110 volts $\pm 10\%$ input (primary) 60 cps $\pm 5\%$. Terminals 3 and 5: 1240 volts at 414 ma (center tapped); regulation 5% max. Electrostatic shield between primary and secondary. Hermetically sealed. |
| T-502 | NL-980849-1 | (7) | Primary (1-2) Secondary #3 (8-9) Secondary #2 (6-7) Secondary #1 (3-5) | #23F #17F #11F #11F | 293 17½ 7 7 ct at 3½ | 3.5 Low Low Low | 1500 V | 1500 V. rms Pri. 5200 V. rms Sec. | Power transformer, filament type: terminals 1 and 2, input (primary): 110 volts $\pm 10\%$ 60 cps $\pm 5\%$, sec. #3 (8 and 9): 6.3 volts at 2 amp, sec. #2 (6 and 7): 2.5 volts at 10 amp, sec. #1 (3 and 5): 2.5 volts at 10 amp, term. #4 is center tap; regulation 10% max. Electrostatic shield between primary and secondary. Hermetically sealed. |
| T-503 | NL-980848-1 | (8) | Primary Secondary | #13F #27F | 144 tapped at 113 3310 ct at 1655 | Low 220 | | 1500 V. rms 4250 V. rms | Power transformer step-up; Primary: 110 V. rms $\pm 10\%$, 60 cps $\pm 5\%$. Secondary: 2480 V. rms ct at 190 ma full primary; or 3160 V. rms ct at 230 ma tapped primary. Regulation 5% max; electrostatic shield between primary and secondary; hermetically sealed. |
| L-1001 | NL-980616-1 | (5) | Single winding, single layer. | #30F | 2740 | 168 max | | 1850 | Input reactor: Inductance: 5 hy min. at 200 ma. Frequency: 100-120 cps. Hermetically sealed. |
| L-1005 | NL-980617-1 | (5) | Single winding, single layer. | #17F | 335 | 1.25 | | 1500 | Input reactor: Inductance: 0.1 hy to 0.4 hy at 1.5 to 0.1 amp. Frequency: 100-120 cps. Hermetically sealed. |
| T-1001 | NL-982185-1** | (9) | Primary (1-2) Secondary #1 (3-5) Secondary #2 (6-7) | #21E #30E 2-#17E | 251 2360 ct at 1180 6 | 2.2 199 Low | | 1500 2000 1500 | Plate transformer: Primary (1-2): 110 volts $\pm 10\%$, 50-60 cps. Secondary #1 (3-5): 1000 volts, 150 ma, terminal 4 is center tap. Secondary #2 (6-7): 2.5 volts at 4.75 amp. Regulation 5% max. Hermetically sealed. Electrostatic shield between primary and secondary windings. |
| T-1002 | NL-980606-1 | (10) | Primary (1-2) Secondary #1 (3-5) Secondary #2 (6-7) Secondary #3 (8-10) Secondary #4 (11-12) | #21F #16F #15F #16F #18F | 280 17 ct at 8½ 17 17 ct at 8½ 13½ | 2.2 Low Low Low Low | | Primary: 1500 V test. Other windings: 1850 V test. | Filament transformer: Primary (1-2): 110 volts $\pm 10\%$, 50-60 cps. Secondary #1 (3-5): 6.3 volts, 2.8 amp, terminal 4 ct. Secondary #2 (6-7): 6.3 volts, 4.25 amp. Secondary #3 (8-10): 6.3 volts, 3 amp; terminal 9 ct. Secondary #4 (11-12): 5 volts, 2 amp. Secondary #5 (13-14): 15 |

* For diagrams (5) and (6) through (10), see page 7-156.

** Later production models use NL-901614-1.

TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPEDANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|--|----------------|-----------|---|--|--|-----------------------|---|----------------------|---|
| T-1002 (cont'd.) | | | Secondary #5 (13-14) Secondary #6 (15-17) | #25F #20F | 39½ 46 tapped at 43½ | Low Low | | | volts, 0.3 amp. Secondary #6 (15-16): 16.5 volts. Secondary #6 (15-17): 17.5 volts, 1 amp. Regulation: secondaries 1-4 is 10%, 5 and 6 is 5% max. Hermetically sealed. Electrostatic shield between primary and secondary windings. |
| T-1003 | NL-980977-1 | (11) | Primary (1-3) Secondary (4-5) | #29E #42E | 273 tapped at 68 4911 | 6.5 1840 | 333:1 or 5714:1 | 1000 | AF input transformer: Primary (1-3) impedance: 600 ohms. 35 ohm tap (1-2). Secondary (4-5) impedance: 200,000 ohms. Frequency response: 100 cps to 5 kc ±½ db. Maximum level: 18 db. Distortion: ½ percent max. Hermetically sealed. |
| T-1004 | NL-980978-1 | (12) | Primary (P-P) Secondary No. 1 (G-G) Secondary No. 2 (0-10K) | #31E #31E #32E | 2144 tapped at 1072 1148 ct at 574 3494 tapped at 3348, 3203 | 84 81 410 | Primary (P-P): 1500 Secondary No. 1: 2100 Secondary No. 2: 3700 | | AF modulation transformer: Primary (P-P): 4200 ohms with 120 ma balanced. Secondary No. 1: 1000 ohms over-all with 20 ma balanced. Secondary No. 2: 8000, 9000 and 10,000 ohms with 140 ma unbalanced. Frequency response: 100 to 15 kc ±½ db. Distortion: 1% max. Hermetically sealed. |
| T-1005 | NL-980979-1 | (13) | Primary (1-2) Secondary (3-4) | #43E #38E | 6132 1672 | 3600 2600 | 25:1 | 1500 V Pri. and Sec. | AF plate coupling transformer: Primary (1-2): 15,000 ohms with 8 ma dc. Secondary (3-4): 600 ohms. Max level: +25 dbm. Frequency response: 200 to 4500 cps ±½ db. Distortion: 5% max. Hermetically sealed. |
| Z-1001 | NL-980974-1 | (14) | Dual Terminals 1-2 Terminals 2-3 | #36E #33E | 2123 1269 | 250 192 58 | | 600 | Low pass filter: Impedance: 10,000 ohms input and output. Cutoff: 6000 cps. Max insertion loss: 0.5 db. Max level: +3 db. Hermetically sealed. |
| RADIO FREQUENCY AMPLIFIER AM-1008/SRT | | | | | | | | | |
| E-1309 | NL-980955-1 | (15) | Single winding, single layer, spaced 1/16 in. apart. | #18 bare, tinned copper wire, 9 in. long | 7 | | | | Parasitic suppressor: wire wound around a 330-ohm, 1-watt resistor. |

* For diagrams (10) through (15) see pages 7-156 and 7-157.

TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPEDANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|--------------------|----------------|-----------|--|----------------------|---|-----------------------|-----------------|-----------------|--|
| L-1301 | NL-981864-1 | (16) | Three pies, single universal winding; unshielded; ceramic form (NS-3-W-02-08) per JAN-I-8. | 10/41 E SSC Litz | Pie 1: 100 turns Pie 2: 100 turns Pie 3: approx 90 turns (See "Remarks") | | | | RF coil: pie 3 contains enough wire to produce inductance of $700 \mu\text{h} \pm 5\%$. Winding is clockwise when viewed from top (Pie 1). Q: 50 min. at 790 kc. Impregnate per method 2. |
| L-1302 | NL-980705-2-4 | (17) | Single winding, single layer, space wound; unshielded; ceramic form Millen #69046. | No. 14 single Formex | 6 double spaced | | | | RF coil: inductance: $0.38 \mu\text{h}$ w/slug withdrawn. Q: 100.0 min. at 25.0 mc. Impregnate per method 3. |
| L-1303 | NL-980705-2-3 | (17) | Single winding, single layer; close wound; unshielded; ceramic form Millen #69046. | No. 14 single Formex | 10 | | | | RF coil: inductance: $0.82 \mu\text{h}$ w/slug withdrawn. Q: 90.0 min. at 25.0 mc. Impregnate per method 3. |
| L-1304 | NL-980705-2-2 | (17) | Single winding, single layer; close wound; unshielded, ceramic form Millen #69046. | No. 20 single Formex | 18 | | | | RF coil: inductance: $2.5 \mu\text{h}$ w/slug withdrawn. Q: 70.0 min. at 7.9 mc. Impregnate per method 3. |
| L-1305 | NL-980705-2-1 | (17) | Single winding, single layer; close wound; unshielded; ceramic form Millen #69046. | No. 26 single Formex | 47 | | | | RF coil: inductance $14.0 \mu\text{h}$ w/slug withdrawn. Q: 50.0 min. at 2.5 mc. Impregnate per method 3. |
| L-1306 | NL-982818-1 | (18) | Single, universal winding, one pie, unshielded; ceramic form. | No. 36 single nylon | 397 | 28 | | | RF coil: inductance: 2.5 mh at 125 ma. Impregnate per method 4. |
| L-1307 | Same as L-1302 | | | | | | | | |
| L-1308 | Same as L-1303 | | | | | | | | |
| L-1309 | Same as L-1304 | | | | | | | | |
| L-1310 | Same as L-1305 | | | | | | | | |
| L-1311 | NL-982759-1 | (19) | Single winding, five pies, universal wound; unshielded; ceramic form. | No. 36E single nylon | 332 per pie; (total turns—1660) | 100 | | | RF coil: inductance: $10.0 \text{ mh} \pm 5\%$ at 0.125 amp D.C. Freq: 0.3-26 mc. Impregnate per method 4. |

* For diagrams (16) through (19) see page 7-157.

TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPEDANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|--------------------|----------------|-----------|---|--|---|-----------------------|-----------------|-----------------|---|
| L-1313 | NL-982571-1 | (20) | Single winding, four layers, bank wound, unshielded; texolite #1422 form. | No. 26E CSC | 113 feet to fill space indicated in diagram | 6 | | | RF coil: Inductance: 0.45 mh +10% -5% at 300 ma. Q: 35 min. at 0.79 mc. Freq: 0.8-2 mc. Impregnate per method 3. |
| L-1314 | NL-982758-1 | (21) | Single winding, single layer, helix; unshielded; ceramic form Ohmite type Z-7. | No. 32 bare copper wire | 192 | 4.6 | | | RF coil: Inductance: 85 μ h +20-0 μ h at 0.5 mc, 1.0 amp. Q: 100 min. at 2.5 mc. Freq: 2.0 mc. Impregnate per method 4. |
| L-1315 | NL-982757-1 | (22) | Single winding, single layer, helix; unshielded; ceramic form Ohmite type Z-14. | #33E | 130 | 3.08 | | | RF coil: Inductance: 44.0 μ h at 0.6 amp. Q: 80.0 min. at 4.0 mc. Freq: 11-26 mc. Impregnate per method 4. |
| L-1316 | NL-983952-1 | (22) | Single winding, single layer, close wound; unshielded; ceramic form Ohmite type Z-14. | No. 28E B & S | 90 | | | | RF coil: Inductance: 26.0 μ h \pm 5% at 2.5 mc, 1.2 amp. Q: 85 min. at 5 mc. Freq: 11-26 mc. Impregnate per method 3. |
| L-1317 | NL-982110-3 | (23) | Single winding, single layer; unshielded; threaded ceramic form. | 3/16 in. O.D. by 0.032 in. wall, silver plated, 1/2 HD copper tubing | 7 1/2 | | | | RF coil: Inductance: 1.7 μ h. |
| L-1318 | NL-982109-3 | (24) | Single winding, single layer; unshielded; threaded ceramic form. | 1/8 in. O.D. by 0.032 in. wall, silver plated, 1/2 HD copper tubing | 11 | | | | RF coil: Inductance: 3.2 μ h. |
| L-1319 | NL-982108-3 | (25) | Single winding, single layer; unshielded; threaded ceramic form. | No. 14 silver clad copper wire | 17 | | | | RF coil: Inductance: 8 μ h. |
| L-1320 | NL-982107-3 | (25) | Single winding, single layer; unshielded; threaded ceramic form. | No. 18 silver clad copper wire | 43 | | | | RF coil: Inductance: 44 μ h. |
| L-1323 | NL-982114-3 | (26) | Single winding, single layer; unshielded; threaded ceramic form. | 3/16 in. by 0.032 in. wall, silver plated, 1/2 HD copper tubing | 4 1/2, adj. tap 5/8 turns from finish | | | | RF coil: Inductance: 0.85 μ h. |
| L-1324 | NL-982113-3 | (27) | Single winding, single layer; unshielded; threaded ceramic form. | 1/8 in. by 0.032 in. wall silver plated, 1/2 HD copper tubing | 6 1/2, adj. tap 1 1/4 turns from finish | | | | RF coil: Inductance: 1.6 μ h. |

* For diagrams (20) through (27) see page 7-157.

TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPEDANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|--------------------|----------------|-----------|---|--------------------------------|---|-----------------------|-----------------|-----------------|---|
| L-1325 | NL-982112-3 | (28) | Single winding, single layer; unshielded; threaded ceramic form. | No. 14 silver clad copper wire | 11 tapped at 1, 1 $\frac{1}{4}$, 1 $\frac{1}{2}$ turns from start | | | | RF coil: Inductance: 7.4 μ h. |
| L-1327 | NL-982111-3 | (28) | Single winding, single layer; unshielded; threaded ceramic form. | No. 18 silver clad copper wire | 27 tapped at 3 $\frac{1}{8}$, 4 and 4 $\frac{7}{8}$ turns from start | | | | RF coil: Inductance: 24 μ h. |
| L-1329 | NL-981966-2-4 | (29) | Single winding, single layer, unshielded; phenolic form. | No. 20 single Formex | 56 tapped at 6 turns from start | | | | RF coil: Inductance: 52 μ h at 2.5 mc. Q: 125.0 min. Impregnate per method 3. |
| L-1331 | NL-981966-2-3 | (30) | Single winding, single layer, unshielded; phenolic form. | No. 26 single Formex | 130 tapped at 10 turns from start | | | | RF coil: Inductance: 245 μ h at 790 kc. Q: 110.0 min. Impregnate per method 3. |
| L-1332 | Same as L-1306 | | | | | | | | |
| L-1333 | NL-982572-1 | (31) | Single winding, four pies, tapered; universal wound; unshielded, ceramic form, JW Miller #4551. | No. 28 CSC | 720 | 10 | | | RF coil: Inductance: 4.0 mh at 0.6 amp. Q: 20 min. at 0.15 mc. Freq: 0.3 to 0.8 mc. Impregnate per method 4. |
| L-1334 | NL-981865-1 | (32) | One pie, CW, single, universal wound, unshielded; ceramic form (NS-3-W-02-08) per JAN-I-8. | No. 10/41E Litz SSC | 70 approx. (See "Remarks") | | | | RF coil: An inductance of 90 μ h \pm 5 percent is required. Q: 50 min at 790 kc. The number of turns is decided by the total inductance. Impregnate per method 2. |
| L-1335 | Same as L-1301 | | | | | | | | |
| L-1336 | Same as L-1334 | | | | | | | | |
| L-1337 | NL-980705-2-5 | (17) | Single winding, single layer, close wound; unshielded; ceramic form Millen #69046. | No. 26E | 35 | | | | RF coil: Inductance: 10 μ h w/slug withdrawn. Q: 75.0 min. at 2.5 mc; Impregnate per method 3. |
| L-1338 | NL-980705-2-6 | (17) | Single winding, single layer, close wound; unshielded; ceramic form Millen #69046. | No. 20E | 16 | | | | RF coil: Inductance: 2.25 μ h w/slug withdrawn. Q: 100.0 min. at 7.9 mc. Impregnate per method 3. |

* For diagram (17) see page 7-157; for diagrams (28) through (32) see pages 7-157 and 7-158.

TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPEDANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|--------------------|----------------|-----------|---|---|--------------------------------|--|-----------------|---|--|
| L-1339 | NL-981966-2-2 | (29) | Single winding, single layer; unshielded; phenolic form. | No. 20 single Formex | 56 | | | | RF coil: Inductance: 52 μ h. Q: 125.0 min. at 2.5 mc; impregnate per method 3. |
| L-1340 | Same as L-1339 | | | | | | | | |
| L-1341 | NL-981966-2-1 | (30) | Single winding, single layer, unshielded; phenolic form. | No. 26 single Formex | 130 | | | | RF coil: Inductance: 245 μ h. Q: 110.0 min. at 790 kc; impregnate per method 3. |
| L-1342 | Same as L-1341 | | | | | | | | |
| L-1343 | NL-980624-1 | (5) | Single winding, multi-layer. | #30E | 3571 | 200 | | Insulated for 3000 volts inst. | Reactor, filter choke; Inductance: 10 hy at 150 ma. Power level: 12 W. Frequency: 100 to 5000 cps. Load impedance: 7000 ohms. To operate at sea level. Hermetically sealed. |
| L-1344 | Same as L-1311 | | | | | | | | |
| L-1345 | NL-901613-1 | (33) | Single winding, single layer, air core. | #16 soft, bare, tinned copper wire | 4 | | | | RF coil: Inductance: 0.1 μ h. |
| T-1302 | NL-980605-1 | (34) | 3 windings. Primary (1-2) Secondary #1 (3-4) Secondary #2 (5-7) | #19F #12F #10F | 284 14 11 ct at 5 1/2 | 1.3 Low Low | | 1500 1500 1500 V | Power transformer, step-down: Primary: 110 V rms \pm 10%, 60 cps \pm 5% Sec. #1: 6.3 V at 6.5 amp. Sec #2: 5.0 V at 14.5 amps, term. 6 is ct. Electrostatic shield between primary and secondary windings. Hermetically sealed. |
| L-1501 | NL-980881-1 | (5) | Single winding, single layer. | #24 | 1100 | 25 | | 6400 | Reactor: Swinging choke. Inductance: 8 hy to 2 hy at 600 to 10 ma DC. Frequency: 300 cps. Hermetically sealed. |
| T-1501 | NL-980883-1 | (36) | Primary #1 (1-2) Primary #2 (3-4) Secondary #4 (5-6) Secondary #3 (7-8) Secondary #2 (9-10) Secondary #1 (11-12) | #26F #26F #12F #12F #12F #8F | 425 425 5 5 5 5 | 11.8 12.7 Low Low Low Low | | Primary 1500 V Other windings 5200 V | Filament transformer: 440 volt operation, 50/60 cyc: Primary, connect terminals 2 and 3. 220 volt operation: Primary, connect terminal 1 to 3 and connect terminal 2 to 4. Secondary No. 4 (5-6): 2.5 volts, 5 amp. Secondary No. 3 (7-8): 2.5 volts, 5 amp. Secondary No. 2 (9-10): 2.5 volts, 5 amp. Secondary No. 1 (11-12): 2.5 volts, 15 amp. Electrostatic shield between primary and secondary windings. Hermetically sealed. |

* For diagram (5) see page 7-156; for diagrams (29), (30), (33), (34) and (36) see pages 7-157 and 7-158.

TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPEDANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|--------------------|-----------------|-----------|--|--------------------------------------|----------------------------|---|-----------------|-----------------|--|
| T-1502 | NL-980880-1 | (37) | Phase 1, 2, 3: Primary #1 | #20F | 177 tapped at 33, 66 | 1.2 | | 1500 | Three phase plate transformer: Primary: 220 V or 440 V rms, 3 phase, 3 wire delta, 50-60 cps; Pri. #1: 220 V. Pri. #2: 220 V. To operate from 220 V connect the 2 coils of each phase in parallel; for 440 V connect the 2 coils of each phase in series. Secondary: 1835 V rms at 518 VA per phase or 2260 V rms at 425 VA per phase; pri. & sec. values same for all 3 phases. Regulation: 5%. Electrostatic shield between pri. & sec. windings. Open core. |
| | | | Primary #2 | #20F | 177 | 1.2 | | 1500 | |
| | | | Secondary | #25F | 1490 | 42 | | 7000 | |
| T-1601 | NL-980976-1 | (38) | Two windings: Primary P1-P2 Secondary 0-8K | RADIO MODULATOR MD-230/SRT | | | | 7500 | High level modulator: Primary (P1-P2): 22,000 ohms w/130 ma balanced. Secondary: 8,000 ohms w/340 ma. Taps at 6,000 and 7,000 ohms. 355 watts, unbalanced. Frequency response: 100 cps to 4.5 kc \pm 1 db with specified load. Distortion: 2% max. Output 355 watts unbalanced, Hermetically sealed. |
| | | | | #28E | 5200, ct at 2600 | 315 | 275:1 | | |
| | | | | #28E | 1880, tapped at 1577, 1300 | 96 | | 7500 | |
| | | | | | | | | | |
| T-1602 | NL-980873-1 | (39) | 4 windings: Primary #1 (1-2) Primary #2 (3-4) Secondary #1 (5-7) Secondary #2 (8-10) | #29F | 710 | 28 | Low | 1500 | Filament transformer: Primaries: 220 V or 440 V, 60 cycles, single phase. For 220 volts operation: Join terminals 1 to 3 and terminals 2 to 4. For 440-volt operation: Join terminals 2 to 3. Secondary (5-7): 82 volts, at 2.5 VA, ct. Secondary (8-10): 5 volts at 13 amp, ct. Electrostatic shield between primary and secondary windings. Hermetically sealed. |
| | | | | #29F | 710 | 32 | | 1500 | |
| | | | | #32F | 274, ct at 137 | 27 | | 1500 | |
| | | | | #10F | 17, ct at 8 $\frac{1}{2}$ | | | 1500 | |
| L-2001 | NL-960140-14-1 | (40) | Two pies, one winding, universal, untapped; shielded; plastic form. | RADIO FREQUENCY OSCILLATOR O-275/SRT | | | | | RF coil: Inductance: 1700 μ h at 1000 cps without slug, 3.65 to 7.1 mh w/slug tuning. Impregnate per method 1, steps 1, 2, 4, 4. |
| | | | | No. 38EF | 420 per pie | 34 | | | |
| L-2002 | NL-960090-14-19 | (41) | Single universal winding; one pie. Unshielded bakelite form Cambridge Thermionic #ES-184. | No. 38 EF | 540 | 34 | | | RF coil: Inductance: 1340 μ h at 0.25 mc without slug, 1700 to 2400 μ h w/slug tuning; min. Q: 20. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2051A | NL-960085-3 | (42) | Single winding, six layer, bank wound; max. coil lg 11/16 in.; unshielded; ceramic form. | No. 5/36 EF2 Litz | 170 tapped at 29, 119 | \pm 10% O-C, 3.45 O-K, 0.57 K-G, 1.85 G-C, 0.95 | | | RF coil: Inductance: 432.5 μ h \pm 1% when mtd in Z-2051. 457.5 \pm 1% in air at 100 kc. Impregnate per method 1, steps 1, 2, 6, 3, 3, 3. |

* For diagrams (37) through (42) see page 7-158.

TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPEDANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|--------------------|----------------|-----------|--|------------|---------------------|-----------------------|-----------------|-----------------|---|
| L-2051B | NL-960187-2 | (43) | Single winding, unshielded H.L. Crowley Crolite 29 ceramic form. | No. 23R | 24-42 (See Remarks) | | | | RF coil: Each coil must be chosen to make its accompanying impedance (Z-2051) resonate at 100 kc $\pm 0.005\%$. The capacity will vary from 735 $\mu\mu\text{f}$ (24 turns) to 891 $\mu\mu\text{f}$ (42 turns). Impregnate per method 1, steps 1, 2, 3, 3. |
| L-2052 | NL-960086-2 | (44) | Single winding, single layer, unshielded ceramic form. H.L. Crowley Crolite #29. | No. 23R | 23 | | | | RF coil: Inductance: 3.95 μh (in air) without slug; 4.2 to 5.4 μh with slug tuning. Q: 115 at 7.9 mc. Impregnate per method 1, steps 1, 2, 3, 3. |
| L-2053 | Same as L-2052 | | | | | | | | |
| L-2054 | Same as L-2052 | | | | | | | | |
| L-2055 | Same as L-2052 | | | | | | | | |
| L-2056 | Same as L-2052 | | | | | | | | |
| L-2057 | Same as L-2052 | | | | | | | | |
| L-2058 | Same as L-2052 | | | | | | | | |
| L-2059 | Same as L-2052 | | | | | | | | |
| L-2060 | Same as L-2052 | | | | | | | | |
| L-2061 | NL-960120-2-4 | (45) | Single winding, single layer, unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 22 EF2 | 13 | | | | RF coil: Inductance: 0.62 μh at 25 mc in air without slug; 0.67 μh to 1.2 μh with slug tuning. Impregnate per method 1, steps 1, 2, 4, 4, 5. |
| L-2062 | NL-960120-2-3 | (45) | Single winding, single layer; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 22 EF2 | 12 $\frac{1}{2}$ | | | | RF coil: Inductance: 0.62 μh at 25 mc in air without slug; 0.67 μh to 1.2 μh with slug tuning. Impregnate per method 1, steps 1, 2, 4, 4, 5. |
| L-2063 | Same as L-2061 | | | | | | | | |
| L-2064 | Same as L-2062 | | | | | | | | |
| L-2065 | Same as L-2061 | | | | | | | | |
| L-2066 | Same as L-2062 | | | | | | | | |
| L-2067 | Same as L-2061 | | | | | | | | |
| L-2068 | Same as L-2062 | | | | | | | | |
| L-2069 | Same as L-2061 | | | | | | | | |

* For diagrams (43) through (45) see pages 7-158 and 7-159.

ORIGINAL

TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPEDANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|--------------------|-----------------|-----------|--|--------------------|-----------------------|--|-----------------|-----------------|---|
| L-2070 | NL-960120-2-2 | (46) | Single winding, single layer; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 20 EF2 | 3 | | | | RF coil: Adj. slug tuning. Impregnate per method 1, steps 1, 2, 4, 4, 5. |
| L-2071 | NL-960120-2-1 | (46) | Single winding, single layer; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 20 EF2 | 2½ | | | | RF coil: Adj. slug tuning. Impregnate per method 1, steps 1, 2, 4, 4, 5. |
| L-2072 | Same as L-2070 | | | | | | | | |
| L-2073 | Same as L-2071 | | | | | | | | |
| L-2074 | Same as L-2070 | | | | | | | | |
| L-2075 | Same as L-2071 | | | | | | | | |
| L-2076 | Same as L-2070 | | | | | | | | |
| L-2077 | Same as L-2071 | | | | | | | | |
| L-2078 | Same as L-2070 | | | | | | | | |
| L-2079 | Same as L-2071 | | | | | | | | |
| L-2080 | Same as L-2052 | | | | | | | | |
| L-2126 | NL-960084-3 | (47) | One winding, eight layer; bank wound, max. coil lg 1 in.; unshielded ceramic form. | No. 5/36 EF2, Litz | 314 tapped at 53, 228 | ±10% O-K, 1.10 K-G, 3.7 G-C, 1.7 O-C, 6.54 | | | RF coil: Inductance: 139 μ h \pm 2% in air at 100 kc. Resonance: 1812 μ mf \pm 2%. Impregnate per method 1, steps 1, 2, 6, 3, 3, 3. |
| L-2201 | NL-960147-1-3 | (48) | Single, universal winding; one pie; unshielded; iron core form. Cambridge Thermionic LPG-3-460F. | No. 38 EF | 245 | 10.5 | | | RF coil: Inductance: 460 μ h \pm 5% at 1000 cps in air. |
| L-2202 | Same as L-2201 | | | | | | | | |
| L-2204 | NL-960090-14-16 | (49) | Single, universal winding; one pie; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 5/41 EF2 Litz | 102 | 2.5 | | | RF coil: Inductance: 70 μ h at 1.25 mc without slug. 74 μ h to 113 μ h with slug tuning. Min. Q: 50. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2205 | Same as L-2204 | | | | | | | | |
| L-2206 | Same as L-2204 | | | | | | | | |

* For diagrams (46) through (49) see page 7-159.

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CORRECTIVE
MAINTENANCENAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16ASection
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TABLE 7-43. WINDING DATA (Cont'd)

| DESIG-NATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPED-ANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|---------------------|-----------------|-----------|---|-------------------|-------|-----------------------|------------------|-----------------|---|
| L-2207 | NL-960090-14-15 | (49) | Single, universal winding; one pie; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 5/41 EF2 Litz | 88 | 2.1 | | | RF coil: Inductance: 49 μ h at 1.25 mc without slug. 52 μ h to 83 μ h with slug tuning. Min. Q: 45. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2208 | Same as L-2207 | | | | | | | | |
| L-2209 | NL-960090-14-18 | (49) | Single, universal winding; one pie; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 34 EF2 | 76 | 1.8 | | | RF coil: Inductance: 35 μ h at 2.5 mc without slug. 38 μ h to 66 μ h w/slug tuning. Min. Q: 15. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2210 | Same as L-2209 | | | | | | | | |
| L-2211 | NL-960090-14-14 | (49) | Single, universal winding; one pie; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 5/41 EF2 Litz | 69 | 1.6 | | | RF coil: Inductance: 29 μ h at 2.5 mc without slug. 32 μ h to 53 μ h w/slug tuning. Min. Q: 40. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2212 | Same as L-2211 | | | | | | | | |
| L-2215 | Same as L-2201 | | | | | | | | |
| L-2216 | Same as L-2201 | | | | | | | | |
| L-2301 | NL-961903-1 | (50) | Single winding, close wound on powdered iron form notched (Stackpole type ICS). | No. 28E | 36 | 0.141 | | | RF coil: Inductance: 10 μ h \pm 10%; Q: 50 minimum. Impregnate per method 1, steps 1, 2, 3, 3, 5. |
| L-2302 | NL-960147-1-2 | (51) | Single universal winding; one pie; unshielded; phenolic form, Cambridge Thermionic #LPB-3-120F. | No. 38 EF | 191 | 7.5 | | | RF coil: Inductance: 120 μ h \pm 5% at 1000 cps in air. |
| L-2303 | Same as L-2302 | | | | | | | | |
| L-2326 | Same as L-2302 | | | | | | | | |
| L-2327 | NL-960090-14-17 | (49) | Single, universal winding; one pie; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 38 EF2 | 36 | 1.7 | | | RF coil: Inductance: 7.4 μ h at 5 mc without slug. 8.0 μ h to 15.6 μ h with slug tuning. Min. Q: 40. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2328 | Same as L-2327 | | | | | | | | |

* For diagrams (49) through (51) see page 7-159.

TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPEDANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|--------------------|-----------------|-----------|---|------------|-------|-----------------------|-----------------|-----------------|---|
| L-2329 | NL-960090-14-20 | (52) | Single winding, single layer; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 38 EF | 36 | 1.6 | | | RF coil: Inductance: 5.8 μ h at 5.0 mc without slug. 6.1 to 11.5 μ h with slug tuning. Min. Q: 50-60. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2330 | Same as L-2329 | | | | | | | | |
| L-2331 | NL-960090-14-22 | (49) | Single, universal winding; one pie; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 38 EF2 | 27 | 1.25 | | | RF coil: Inductance: 4.3 μ h at 5.0 mc without slug. 4.5 μ h to 8.6 μ h with slug tuning. Min. Q: 40. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2332 | Same as L-2331 | | | | | | | | |
| L-2333 | NL-960090-14-21 | (49) | Single, universal winding; one pie; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 38 EF2 | 22 | 1.0 | | | RF coil: Inductance: 3.1 μ h at 5.0 mc without slug. 3.3 μ h to 6.0 μ h with slug tuning. Min. Q: 35. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2334 | Same as L-2333 | | | | | | | | |
| L-2335 | Same as L-2333 | | | | | | | | |
| L-2336 | NL-960147-1-1 | (51) | Single, universal winding; one pie; unshielded; phenolic form, Cambridge Thermionic #LPB-3-63F. | No. 38 EF | 138 | 5.5 | | | RF coil: Inductance: 63 μ h \pm 5% at 1000 cps in air. |
| L-2337 | Same as L-2336 | | | | | | | | |
| L-2338 | NL-960140-14-32 | (53) | Single winding, single layer; shielded; plastic form. | No. 32 EF2 | 10 | | | | RF coil: Inductance: 1.19 μ h at 12.5 mc without slug. Min. Q: 75. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2339 | NL-960140-14-33 | (53) | Single winding, single layer, shielded; plastic form. | No. 32 EF2 | 10 | | | | RF coil: Inductance: 1.19 μ h at 12.5 mc without slug. Min. Q: 75. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2340 | Same as L-2302 | | | | | | | | |
| L-2426 | NL-960090-14-1 | (54) | Single winding, single layer; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 30 EF2 | 8 | | | | RF coil: Inductance: 0.53 μ h at 12.5 mc without slug. 0.56 μ h to 0.95 μ h with slug tuning. Min. Q: 50-55. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2427 | NL-960090-14-5 | (55) | Single winding, single layer; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 28 EF2 | 7 | | | | RF coil: Inductance: 0.40 μ h at 12.5 mc without slug. 0.45 μ h to 0.70 μ h with slug tuning. Min Q: 40-55. Impregnate per method 1, steps 1, 2, 4, 4. |

* For diagrams (49), (51), and (52) through (55) see page 7-159.

TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPEDANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|--------------------|-----------------|-----------|--|------------|-------|-----------------------|-----------------|-----------------|--|
| L-2428 | NL-960090-14-3 | (55) | Single winding; single layer; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 22 EF2 | 5 | | | | RF coil: Inductance: 0.21 μ h at 25 mc without slug. 0.23 μ h to 0.34 μ h with slug tuning. Min Q: 60-70. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2429 | NL-960090-14-4 | (55) | Single winding, single layer; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 22 EF2 | 4 | | | | RF coil: Inductance: 0.16 μ h at 25 mc without slug. 0.17 μ h to 0.25 μ h with slug tuning. Min. Q: 50-65. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2430 | Same as L-2302 | | | | | | | | |
| L-2431 | Same as L-2426 | | | | | | | | |
| L-2432 | Same as L-2427 | | | | | | | | |
| L-2433 | Same as L-2428 | | | | | | | | |
| L-2434 | Same as L-2429 | | | | | | | | |
| L-2435 | Same as L-2302 | | | | | | | | |
| L-2436 | Same as L-2426 | | | | | | | | |
| L-2437 | Same as L-2427 | | | | | | | | |
| L-2438 | Same as L-2428 | | | | | | | | |
| L-2439 | Same as L-2429 | | | | | | | | |
| L-2440 | Same as L-2302 | | | | | | | | |
| L-2441 | Same as L-2426 | | | | | | | | |
| L-2442 | Same as L-2427 | | | | | | | | |
| L-2443 | Same as L-2428 | | | | | | | | |
| L-2444 | Same as L-2429 | | | | | | | | |
| L-2445 | Same as L-2302 | | | | | | | | |
| L-2446 | Same as L-2302 | | | | | | | | |
| L-2526 | NL-960090-14-12 | (49) | Single, universal winding; one pie; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 38 EF2 | 22 | 1.0 | | | RF coil: Inductance: 3.1 μ h at 5.0 mc without slug. 3.3 μ h to 6.0 μ h with slug tuning. Min. Q: 35. One term. grounded. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2527 | NL-960090-14-6 | (54) | Single winding, single layer, unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 38 EF | 17 | | | | RF coil: Inductance: 2.1 μ h at 7.9 mc without slug. 2.4 μ h to 4.2 μ h with slug tuning. Min. Q: 45-50. Impregnate per method 1, steps 1, 2, 4, 4. |

* For diagrams (49), (54), and (55) see page 7-159.

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TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPEDANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|--------------------|----------------|-----------|--|------------|-------|-----------------------|-----------------|-----------------|---|
| L-2528 | NL-960090-14-8 | (54) | Single winding, single layer; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 32 EF | 12 | | | | RF coil: Inductance: 0.93 μ h at 7.9 mc without slug. 1.0 μ h to 1.9 μ h with slug tuning. Min. Q: 45. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2529 | NL-960090-14-9 | (54) | Single winding, single layer; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 32 EF2 | 10 | | | | RF coil: Inductance: 0.75 μ h at 12.5 mc without slug. 0.80 μ h to 1.40 μ h with slug tuning. Min. Q: 60-65. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2530 | Same as L-2426 | | | | | | | | |
| L-2531 | Same as L-2426 | | | | | | | | |
| L-2532 | Same as L-2426 | | | | | | | | |
| L-2533 | Same as L-2426 | | | | | | | | |
| L-2534 | Same as L-2427 | | | | | | | | |
| L-2535 | Same as L-2427 | | | | | | | | |
| L-2536 | NL-960090-14-2 | (56) | Single winding, single layer; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 22 EF2 | 7 | | | | RF coil: Inductance: 0.31 μ h at 25 mc without slug. 0.33 μ h to 0.55 μ h with slug tuning. Min. Q: 70-75. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2537 | Same as L-2526 | | | | | | | | |
| L-2538 | Same as L-2527 | | | | | | | | |
| L-2539 | Same as L-2528 | | | | | | | | |
| L-2540 | Same as L-2529 | | | | | | | | |
| L-2541 | Same as L-2426 | | | | | | | | |
| L-2542 | Same as L-2426 | | | | | | | | |
| L-2543 | Same as L-2426 | | | | | | | | |
| L-2544 | Same as L-2426 | | | | | | | | |
| L-2545 | Same as L-2427 | | | | | | | | |
| L-2546 | Same as L-2427 | | | | | | | | |
| L-2547 | Same as L-2536 | | | | | | | | |
| L-2548 | Same as L-2526 | | | | | | | | |
| L-2549 | Same as L-2527 | | | | | | | | |
| L-2550 | Same as L-2528 | | | | | | | | |

* For diagrams (54) and (56) see page 7-159.

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TABLE 7-43. WINDING DATA (Cont'd)

| DESIG- NATION SYMBOL | FTL DWG NUMBER | DIA- GRAM | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPED- ANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|----------------------------|-------------------|--------------|---------|-----------|-------|-----------------------------|-------------------------|-----------------------|---------|
| L-2551 | Same as L-2529 | | | | | | | | |
| L-2552 | Same as L-2426 | | | | | | | | |
| L-2553 | Same as L-2426 | | | | | | | | |
| L-2554 | Same as L-2426 | | | | | | | | |
| L-2555 | Same as L-2426 | | | | | | | | |
| L-2556 | Same as L-2427 | | | | | | | | |
| L-2557 | Same as L-2427 | | | | | | | | |
| L-2558 | Same as L-2536 | | | | | | | | |
| L-2559 | Same as L-2526 | | | | | | | | |
| L-2560 | Same as L-2527 | | | | | | | | |
| L-2561 | Same as L-2528 | | | | | | | | |
| L-2562 | Same as L-2529 | | | | | | | | |
| L-2563 | Same as L-2426 | | | | | | | | |
| L-2564 | Same as L-2426 | | | | | | | | |
| L-2565 | Same as L-2426 | | | | | | | | |
| L-2566 | Same as L-2426 | | | | | | | | |
| L-2567 | Same as L-2427 | | | | | | | | |
| L-2568 | Same as L-2427 | | | | | | | | |
| L-2569 | Same as L-2536 | | | | | | | | |
| L-2570 | Same as L-2526 | | | | | | | | |
| L-2571 | Same as L-2527 | | | | | | | | |
| L-2572 | Same as L-2528 | | | | | | | | |
| L-2573 | Same as L-2529 | | | | | | | | |
| L-2574 | Same as L-2529 | | | | | | | | |
| L-2575 | Same as L-2426 | | | | | | | | |
| L-2576 | Same as L-2426 | | | | | | | | |
| L-2577 | Same as L-2426 | | | | | | | | |
| L-2578 | Same as L-2427 | | | | | | | | |
| L-2579 | Same as L-2427 | | | | | | | | |

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TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPEDANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|--------------------|-----------------|-----------|--|------------|-------|-----------------------|-----------------|-----------------|--|
| L-2580 | Same as L-2536 | | | | | | | | |
| L-2581 | Same as L-2302 | | | | | | | | |
| L-2582 | Same as L-2302 | | | | | | | | |
| L-2583 | Same as L-2302 | | | | | | | | |
| L-2584 | Same as L-2302 | | | | | | | | |
| L-2626 | Same as L-2336 | | | | | | | | |
| L-2627 | Same as L-2336 | | | | | | | | |
| L-2628 | Same as L-2336 | | | | | | | | |
| L-2629 | Same as L-2209 | | | | | | | | |
| L-2630 | Same as L-2209 | | | | | | | | |
| L-2651 | NL-960090-14-7 | (55) | Single winding, single layer; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 32 EF2 | 15 | | | | RF coil: Inductance: 1.25 μ h at 7.9 mc without slug. 1.40 μ h to 2.60 μ h with slug tuning. Min. Q: 45-50. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2652 | Same as L-2651 | | | | | | | | |
| L-2653 | Same as L-2528 | | | | | | | | |
| L-2654 | Same as L-2529 | | | | | | | | |
| L-2655 | Same as L-2426 | | | | | | | | |
| L-2656 | Same as L-2426 | | | | | | | | |
| L-2657 | NL-960090-14-10 | (52) | Single winding, single layer; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 38 EF | 36 | 1.6 | | | RF coil: Inductance: 5.8 μ h at 5.0 mc without slug. 6.1 μ h to 11.5 μ h with slug tuning. Min. Q: 50-60. One term. grounded. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2658 | NL-960090-14-13 | (49) | Single, universal winding; one pie; unshielded; bakelite form, Cambridge Thermionic #ES-184. | No. 38 EF2 | 27 | 1.25 | | | RF coil: Inductance: 4.3 μ h at 5.0 mc without slug. 4.5 μ h to 8.6 μ h with slug tuning. Min. Q: 40. One term. grounded. Impregnate per method 1, steps 1, 2, 4, 4. |
| L-2659 | Same as L-2526 | | | | | | | | |
| L-2660 | Same as L-2527 | | | | | | | | |
| L-2661 | Same as L-2651 | | | | | | | | |
| L-2662 | Same as L-2651 | | | | | | | | |
| L-2663 | Same as L-2528 | | | | | | | | |

* For diagrams (49), (52), and (55) see page 7-159.

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TABLE 7-43. WINDING DATA (Cont'd)

| DESIG- NATION SYMBOL | FTL DWG NUMBER | DIA- GRAM | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPED- ANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|----------------------------|-------------------|--------------|---------|-----------|-------|-----------------------------|-------------------------|-----------------------|---------|
| L-2664 | Same as L-2529 | | | | | | | | |
| L-2665 | Same as L-2426 | | | | | | | | |
| L-2666 | Same as L-2426 | | | | | | | | |
| L-2667 | Same as L-2657 | | | | | | | | |
| L-2668 | Same as L-2658 | | | | | | | | |
| L-2669 | Same as L-2526 | | | | | | | | |
| L-2670 | Same as L-2527 | | | | | | | | |
| L-2671 | Same as L-2302 | | | | | | | | |
| L-2672 | Same as L-2302 | | | | | | | | |
| L-2673 | Same as L-2302 | | | | | | | | |
| L-2674 | Same as L-2302 | | | | | | | | |
| L-2675 | Same as L-2651 | | | | | | | | |
| L-2676 | Same as L-2651 | | | | | | | | |
| L-2677 | Same as L-2528 | | | | | | | | |
| L-2678 | Same as L-2529 | | | | | | | | |
| L-2679 | Same as L-2426 | | | | | | | | |
| L-2680 | Same as L-2426 | | | | | | | | |
| L-2681 | Same as L-2657 | | | | | | | | |
| L-2682 | Same as L-2658 | | | | | | | | |
| L-2683 | Same as L-2526 | | | | | | | | |
| L-2684 | Same as L-2527 | | | | | | | | |
| L-2685 | Same as L-2651 | | | | | | | | |
| L-2686 | Same as L-2651 | | | | | | | | |
| L-2687 | Same as L-2528 | | | | | | | | |
| L-2688 | Same as L-2529 | | | | | | | | |
| L-2689 | Same as L-2426 | | | | | | | | |
| L-2690 | Same as L-2426 | | | | | | | | |
| L-2691 | Same as L-2657 | | | | | | | | |
| L-2692 | Same as L-2658 | | | | | | | | |

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TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FTL DWG NUMBER | DIA-GRAM | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPED-ANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|--------------------|----------------|----------|---------|-----------|-------|-----------------------|------------------|-----------------|---------|
| L-2693 | Same as L-2526 | | | | | | | | |
| L-2694 | Same as L-2527 | | | | | | | | |
| L-2801 | Same as L-2426 | | | | | | | | |
| L-2802 | Same as L-2426 | | | | | | | | |
| L-2803 | Same as L-2426 | | | | | | | | |
| L-2804 | Same as L-2427 | | | | | | | | |
| L-2805 | Same as L-2427 | | | | | | | | |
| L-2806 | Same as L-2536 | | | | | | | | |
| L-2807 | Same as L-2528 | | | | | | | | |
| L-2808 | Same as L-2529 | | | | | | | | |
| L-2809 | Same as L-2529 | | | | | | | | |
| L-2810 | Same as L-2529 | | | | | | | | |
| L-2811 | Same as L-2426 | | | | | | | | |
| L-2812 | Same as L-2426 | | | | | | | | |
| L-2813 | Same as L-2426 | | | | | | | | |
| L-2814 | Same as L-2427 | | | | | | | | |
| L-2815 | Same as L-2427 | | | | | | | | |
| L-2816 | Same as L-2536 | | | | | | | | |
| L-2817 | Same as L-2528 | | | | | | | | |
| L-2818 | Same as L-2529 | | | | | | | | |
| L-2819 | Same as L-2529 | | | | | | | | |
| L-2820 | Same as L-2529 | | | | | | | | |
| L-2821 | Same as L-2302 | | | | | | | | |
| L-2822 | Same as L-2302 | | | | | | | | |
| L-2823 | Same as L-2302 | | | | | | | | |
| L-2824 | Same as L-2302 | | | | | | | | |
| L-2825 | Same as L-2427 | | | | | | | | |
| L-2826 | Same as L-2536 | | | | | | | | |
| L-2827 | Same as L-2528 | | | | | | | | |

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TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPEDANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|--------------------|----------------|-----------|--|--------------------------|--------------------------|----------------------------------|-----------------|--------------------------------|--|
| L-2828 | Same as L-2528 | | | | | | | | |
| L-2829 | Same as L-2529 | | | | | | | | |
| L-2830 | Same as L-2529 | | | | | | | | |
| L-2831 | Same as L-2426 | | | | | | | | |
| L-2832 | Same as L-2426 | | | | | | | | |
| L-2833 | Same as L-2426 | | | | | | | | |
| L-2834 | Same as L-2427 | | | | | | | | |
| L-2835 | Same as L-2427 | | | | | | | | |
| L-2836 | Same as L-2536 | | | | | | | | |
| L-2837 | Same as L-2528 | | | | | | | | |
| L-2838 | Same as L-2528 | | | | | | | | |
| L-2839 | Same as L-2529 | | | | | | | | |
| L-2840 | Same as L-2529 | | | | | | | | |
| L-2841 | Same as L-2426 | | | | | | | | |
| L-2842 | Same as L-2426 | | | | | | | | |
| L-2843 | Same as L-2426 | | | | | | | | |
| L-2844 | Same as L-2427 | | | | | | | | |
| L-2845 | Same as L-2658 | | | | | | | | |
| L-2846 | Same as L-2658 | | | | | | | | |
| T-2051 | NL-960140-14-5 | (57) | Two windings, 2 pies, universal wound; shielded; plastic form. | No. 38 EF2 | 420 each, Pri. and Sec. | 38 each Pri. and Sec. | | | RF transformer: can has no core. Inductance: Pri. and Sec. each 2170 μ h at 1000 cps. Min. Q: 50. Impregnate per method 1, steps 1, 2, 4, 4. |
| T-2126 | NL-960140-14-8 | (57) | Two windings, 2 pies, universal wound; shielded; plastic form. | No. 38 EF2 | 420 each, Pri. and Sec. | 38 each, Pri. and Sec. | | | RF transformer: Same as T-2051 except for mounting. |
| T-2201 | NL-960048-1 | (13) | Two windings. Primary (1-2) Secondary (3-4) | Pri: 40F Sec: 37E | Pri: 448 Sec: 896 | Pri: 10,000 Sec: 44,000 | 10:44 | 2000 V. Pri. and Sec. | Pulse transformer: repetition freq: 10,000 cps. Pulse width: 10-20 cps. Pri.: 0.5 hy at 3 V, 1000 cps. Peak signal voltage: Pri.: 110 V neg, 10 V pos; Sec.: 225 V positive. Average current in primary: 5 ma DC. Leading edge of pulse 4 μ sec. max. for a 225 V. pulse. Hermetically sealed. |

* For diagram (13) see page 7-156; for diagram (57) see page 7-159.

TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FIL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPEDANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|--------------------|---------------------------|-----------|--|--------------------|---------------------------------|-----------------------|-----------------|-----------------|---|
| T-2202 | NL-960140-14-16 | (58) | Two windings, universal wound, two pies, coils touch each other; shielded; plastic form. | No. 34 EF2 | 160 each, Primary and Secondary | 5.1 | 1:1 | | RF transformer: Inductance: Primary and Secondary each 230 μ h at 1000 cps without slug and can. Min. Q: 25 at 0.79 mc. Impregnate per method 1, steps 1, 2, 4, 4. |
| T-2203 | NL-960140-14-19 | (59) | Two windings, single layer; shielded; plastic form. | No. 32 EF2 | 19 each Primary and Secondary | | 1:1 | | RF transformer: Inductance: Primary and Secondary each 2.8 μ h at 7.9 mc without slug and can. Min. Q: 80. Impregnate per method 1, steps 1, 2, 4, 4. |
| T-2204 | Same as T-2203 | | | | | | | | |
| T-2205 | Same as T-2203 | | | | | | | | |
| T-2326 | NL-960140-14-27 | (60) | Two windings, universal, two pies, coils touch each other; shielded; plastic form. | No. 7/41 EF2, Litz | 38 each Pri. & Sec. | 0.79 | 1:1 | | RF transformer: Inductance: Pri. & Sec., each 16 μ h at 1000 cps without slug and can. Min. Q: 45 at 2.5 mc. Impregnate per method 1, steps 1, 2, 4, 4. |
| T-2916 | UTC 89564-A Dwg # SH-5722 | (13) | Two windings: Primary (1-2) Secondary (3-4) | #42F #44F | 3750 7500 | 730 3300 | 1:4 | 750 750 | AF transformer: Primary: impedance 15,000 ohms, 4 ma. Secondary: impedance 60,000 ohms. Freq range: 40 to 15,000 cps \pm 2 db; max level 0 db. |
| T-2920 | NL-980604-1 | (61) | Two windings: Primary (1-2) Secondary (3-4) | #26F #19F | 399 46 | 5.8 Low | | 1500 1500 | Filament transformer: Pri: 60 V \pm 10%, 50/60 cps. Sec.: 6.3 V at 2.4 amp. Regulation: 9% max. Electrostatic shield between primary and secondary windings. Hermetically sealed. |
| T-2921 | NL-980603-1 | (6) | Two windings: Primary (1-2) Secondary (3-5) | #24F #12F | 378 23, ct at 11 $\frac{1}{2}$ | 5.0 Low | | 1500 1500 | Filament transformer: Pri.: 110 V rms \pm 10%, 50/60 cps. Sec.: 6.3 V at 9.5 amp, ct. (4) Regulation: 10% max. Electrostatic shield between primary and secondary windings. Hermetically sealed. |
| T-2922 | NL-960398-1 | (61) | Two windings: Primary (1-2) Secondary (3-4) | #32F #20F | 1030 69 | 52 Low | | 1500 1500 | Filament transformer: Pri.: 110 V rms \pm 10%; 50/60 cps. Sec.: 6.3 V. at 2.0 amp. Regulation: 18% max. Electrostatic shield between primary and secondary windings. Hermetically sealed. |
| Z-2031 | NL-960140-14-2 | (62) | Two windings, universal, 2 pies; shielded; plastic form. | #7/41 EF2 Litz | 78 each Pri. & Sec. | 1.86 | 1:1 | | RF transformer: Inductance: Pri. & Sec. each 75 μ h at 1000 cps without slug and can. Min. Q: 70 at 1.25 mc. Includes capacitors C-2034 & C-2035. Peak freq. 500 kc. Impregnate per method 1, steps 1, 2, 4, 4. |
| Z-2032 | NL-960140-14-3 | (62) | Two windings, universal, 2 pies; shielded; plastic form. | #7/41 EF2 Litz | 78 each Pri. & Sec. | 1.86 | 1:1 | | RF transformer: Inductance: Pri. & Sec. each 75 μ h at 1000 cps without slug and can. Min. Q: 70 at 1.25 mc. Includes capacitors C-2039 & C-2040. Peak freq. 1 mc. Impregnate per method 1, steps 1, 2, 4, 4. |

* For diagrams (6) and (13) see page 7-156; for diagrams (58) through (62) see pages 7-159 and 7-160.

TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPED-ANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|--------------------|-----------------|-----------|--|----------------|---------------------|-----------------------|------------------|-----------------|---|
| Z-2033 | NL-960140-14-4 | (62) | Two windings, universal, 2 pies; shielded; plastic form. | #7/41 EF2 Litz | 78 each Pri. & Sec. | 1.86 | 1:1 | | RF transformer: Inductance: Pri. & Sec. each 75 μ h at 1000 cps without slug and can. Min. Q: 70 at 1.25 mc. Includes capacitor C-2041. Peak freq. 1 mc. Impregnate per method 1, steps 1, 2, 4, 4. |
| Z-2101 | NL-960140-14-6 | (63) | Two windings, single layer; shielded; plastic form. | #34 EF2 | 41 each Pri. & Sec. | | 1:1 | | RF transformer: Inductance: Pri. & Sec. each 8.4 μ h at 3.95 mc without slug and can. Min. Q: 75. Includes capacitors C-2103 & C-2104. Peak freq. 4 mc. Impregnate per method 1, steps 1, 2, 4, 4. |
| Z-2102 | NL-960140-14-7 | (59) | Two windings, single layer; shielded; plastic form. | #32 EF2 | 19 each Pri. & Sec. | | 1:1 | | RF transformer: Inductance: Pri. & Sec. each 2.8 μ h at 7.9 mc without slug and can. Min. Q: 80. Includes capacitor C-2107. Peak freq. 8 mc. Impregnate per method 1, steps 1, 2, 4, 4. |
| Z-2151 | NL-960140-14-9 | (62) | Two windings, universal, 2 pies; shielded; plastic form. | #7/41 EF2 Litz | 78 each Pri. & Sec. | 1.86 | 1:1 | | RF transformer: Inductance: Pri. & Sec. each 75 μ h at 1000 cps without slug and can. Min. Q: 70 at 1.25 mc. Includes capacitors C-2155 & C-2156. Peak freq. 1.1 mc. Impregnate per method 1, steps 1, 2, 4, 4. |
| Z-2152 | NL-960140-14-10 | | Same as Z-2151, incl C-2157 & C-2158 | | | | | | |
| Z-2153 | NL-960140-14-11 | (62) | Two windings, universal, 2 pies; shielded; plastic form. | #7/41 EF2 Litz | 78 each Pri. & Sec. | 1.86 | 1:1 | | RF transformer: Inductance: Pri. & Sec. each 75 μ h at 1000 cps without slug and can. Min. Q: 70 at 1.25 mc. Includes capacitors C-2159 & C-2160. Peak freq. 1.2 mc. Impregnate per method 1, steps 1, 2, 4, 4. |
| Z-2154 | NL-960140-14-12 | | Same as Z-2153; incl C-2161 & C-2162 | | | | | | |
| Z-2155 | NL-960140-14-13 | (64) | Two windings, single layer; shielded; plastic form. | #32 EF2 | 19 each Pri. & Sec. | | 1:1 | | RF transformer: Inductance: Pri. & Sec. each 2.8 μ h at 7.9 mc without slug and can. Min. Q: 80. Includes capacitors C-2165 & C-2166. Peak freq. 9.2 mc. Impregnate per method 1, steps 1, 2, 4, 4. |
| Z-2156 | NL-960140-14-14 | (64) | Two windings, single layer; shielded; plastic form. | #32 EF2 | 19 each Pri. & Sec. | | 1:1 | | RF transformer: Inductance: Pri. & Sec. each 2.8 μ h at 7.9 mc without slug and can. Min. Q: 80. Includes capacitor C-2176. Peak freq. 9.2 mc. Impregnate per method 1, steps 1, 2, 4, 4. |
| Z-2157 | NL-960140-14-15 | | Same as Z-2153; incl C-2179 & C-2180 | | | | | | |

* For diagrams (59), (62), (63), and (64) see page 7-160.

TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPED-ANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|--------------------|-----------------|-----------|---|----------------|----------------------------------|-----------------------|------------------|-----------------|--|
| Z-2201 | NL-960140-14-17 | (65) | Single winding, universal, one pie; shielded; plastic form. | #7/41 EF2 Litz | 250 | 6.5 | | | RF coil: Inductance: 410 μ h at 1000 cps without slug and can. Min. Q: 70 at 0.79 mc. Includes capacitor C-2218. Impregnate per method 1, steps 1, 2, 4, 4. |
| Z-2202 | NL-960140-14-18 | (66) | Single winding, universal, one pie; shielded; plastic form. | #7/41 EF2 Litz | 56 | 1.3 | | | RF coil: Inductance: 36 μ h at 1000 cps without slug and can. Min. Q: 50 at 2.5 mc. Includes capacitor C-2230. Impregnate per method 1, steps 1, 2, 4, 4. |
| Z-2203 | NL-960140-14-22 | | Same as Z-2202; incl C-2234 | | | | | | |
| Z-2301 | NL-960140-14-23 | (63) | Two windings, single layer; shielded; plastic form. | #32 EF2 | 33 each Pri. & Sec. | | 1:1 | | RF transformer: Inductance: Pri. & Sec. each 5.5 μ h at 3.95 mc without slug and can. Min. Q: 70. Includes capacitors C-2303 & C-2304. Peak freq. 5 mc. Impregnate per method 1, steps 1, 2, 4, 4. |
| Z-2302 | NL-960110-14-24 | (63) | Two windings, single layer; shielded; plastic form. | #32 EF2 | 33 each Pri. & Sec. | | 1:1 | | RF transformer: Inductance: Pri. & Sec. each 5.5 μ h at 3.95 mc without slug and can. Min. Q: 70. Includes capacitor C-2307. Peak freq. 5 mc. Impregnate per method 1, steps 1, 2, 4, 4. |
| Z-2303 | NL-960140-14-25 | (67) | Two windings, single layer; shielded; plastic form. | #32 EF2 | 10 each Pri. & Sec. | | 1:1 | | RF transformer: Inductance: Pri. & Sec. each 1.19 μ h at 12.5 mc without slug and can. Min. Q: 75. Includes capacitors C-2317 & C-2318. Peak freq. 15 mc. Impregnate per method 1, steps 1, 2, 4, 4. |
| Z-2304 | NL-960140-14-26 | (67) | Two windings, single layer; shielded; plastic form. | #32 EF2 | 10 each Pri. & Sec. | | 1:1 | | RF transformer: Inductance: Pri. & Sec. each 1.19 μ h at 12.5 mc without slug and can. Min. Q: 75. Includes capacitor C-2321. Peak freq. 15 mc. Impregnate per method 1, steps 1, 2, 4, 4. |
| Z-2326 | NL-960140-14-28 | (66) | Single winding, universal, one pie; shielded plastic form. | #7/41 EF2 Litz | 51 | 1.24 | | | RF coil: Inductance: 31 μ h at 1000 cps without slug and can. Min. Q: 50 at 2.5 mc. Includes capacitor C-2340. Impregnate per method 1, steps 1, 2, 4, 4. |
| Z-2327 | NL-960140-14-29 | (68) | Two windings, single layer; shielded; plastic form. | #32 EF2 | 6 $\frac{1}{2}$ each Pri. & Sec. | | 1:1 | | RF transformer: Inductance: Pri. & Sec. each 0.66 μ h at 12.5 mc without slug and can. Min. Q: 55. Includes capacitors C-2383 & C-2384. Impregnate per method 1, steps 1, 2, 4, 4. |
| Z-2328 | NL-960140-14-30 | | Same as Z-2327; incl C-2387 & C-2388 | | | | | | |

* For diagrams (63) and (65) through (68) see page 7-160.

TABLE 7-43. WINDING DATA (Cont'd)

| DESIG-NATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPED-ANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|---------------------------------------|-----------------|-----------|---|---|---|---|------------------|--|--|
| Z-2329 | NL-960140-14-31 | (68) | Two windings, single layer; shielded; plastic form. | #32 EF2 | 6½ each Pri. & Sec. | | 1:1 | | RF transformer: Inductance: Pri. & Sec. each 0.66 μh at 12.5 mc without slug and can. Min. Q: 55. Includes capacitor C-2391. Impregnate per method 1, steps 1, 2, 4, 4. |
| POWER SUPPLY PP-1094/SRT | | | | | | | | | |
| L-3001 | NL-980692-1 | (5) | Single winding, single layer. | #28F | 2300 | 85 | | 1850 | Reactor: swinging choke; inductance 3 to 12 hy at 230 to 23 ma. Freq: 100-120 cps. Hermetically sealed. |
| L-3002 | NL-980680-1 | (5) | Single winding, single layer. | #29F | 3000 | 135 | | 1700 | Reactor: swinging choke; inductance 10 to 40 hy at 125 to 12.5 ma. Freq: 100-120 cps. Hermetically sealed. |
| L-3003 | NL-980679-1 | (69) | Terms. 1-2 (Input section) Terms. 2-3 (Filter section) | #28F #28F | 1730 1190 | 60 35 | | 1850 1850 | Reactor: Dual filter choke; input section; inductance 2 to 10 hy at 230 to 23 ma DC, Filter section; 2 hy at 230 ma DC, Freq: 100-120 cps. Hermetically sealed. |
| T-3001 | NL-982565-1 | (70) | Primary (1-2) Sec. #1 (3-7) Sec. #2 (8-9) Sec. #3 (10-11) Sec. #4 (12-13) Sec. #5 (14-18) Sec. #6 (19-21) | #14E #14E #18E #18E #18E #25E #30E | 144 88 tapped at 77, 44, 11 7 7 7 1150 tapped at 1078, 575, 72 800 ct at 400 | Low Low Low Low Low 33 63 | | 1500 1500 1500 1500 1500 2700 1500 | Power transformer: Pri: 110 V ±10%, 50/60 cps. Sec. #1 (3-7): 64 V, 3 amp (4-6): 48 V, ct. Sec. #2: 5.0 V, 2 amp. Sec. #3: 5.0 V, 2 amp. Sec. #4: 5.0 V, 2 amp. Sec. #5 (14-18): 840 V, 230 ma (15-17): 740 V, ct. Sec. #6: 590 V, 125 ma, ct. Electrostatic shield between primary & secondary windings. Hermetically sealed. |
| TRANSMITTER COUPLER CU-402/SRT | | | | | | | | | |
| T-3201 | NL-901601-14 | (71) | Single winding, multi-layer wound; toroidal core 0.001 in. thk Al-legheny Mumetal hydrogen annealed after winding. | 0.021 in. thk silver pl copper sheet, tapered ½ in. to 3/16 in. Term G is at ½ in. wd end | 7 tapped at 6, 5, 3 | | | | Impedance transformer: Impedance at 1.0 mc (G-1) 370 + j 100 ohms, (1-2) 170 + j 45 ohms, (2-3) 42 + j 10 ohms, (3-4) 42 + j 10 ohms. Turns insulated by electrical tape. |

* For diagram (5) see page 7-156; for diagrams (68) through (71) see page 7-160.

TABLE 7-43. WINDING DATA (Cont'd)

| DESIGNATION SYMBOL | FTL DWG NUMBER | DIA-GRAM* | WINDING | WIRE SIZE | TURNS | D-C RESISTANCE (Ohms) | IMPEDANCE RATIO | HIPOT A-C VOLTS | REMARKS |
|--------------------|----------------|-----------|---|--------------------------------------|------------|-----------------------|-----------------|-----------------|--|
| T-3202 | NL-961094-1 | (72) | Single winding, single layer, close toroidal wound; core 0.001 in. thk Allegheny Mumetal hydrogen annealed after winding; shielded. | #24 Triple coated formex wire | 10 ct at 5 | | | | RF transformer: Impedance: $330 + j 240$ ohms at 1.0 mc $800 + j 330$ ohms at 3.0 mc. Turns insulated by fiberglass tape. Grounding strap is ct. |
| L-3501 | p/o L-3503 | (73) | Single winding, bank wound on silicone bonded fiberglas form. | #85-86 Litz wire, double silk enamel | 79 | | | | RF coil: 1 mh $\pm 10\%$ at 250 kc. |
| L-3502 | p/o L-3503 | (74) | Single winding, bank wound on silicone bonded fiberglas form. | #85-36 Litz wire, double silk enamel | 58 | | | | RF coil: 700 mh $\pm 10\%$ at 790 kc. |
| L-3503 | D-2011139 | (75) | Two windings, bank wound on silicone bonded fiberglas form. | | | | | | RF transformer: consists of L-3501 and L-3502. |

* For diagrams (72) through (75) see page 7-160.

TABLE 7-43. WINDING DATA

| | | | | |
|-----------|-----------|-----------|-----------|-----------|
| <p>1</p> | <p>2</p> | <p>3</p> | <p>4</p> | <p>5</p> |
| <p>6</p> | <p>7</p> | <p>8</p> | <p>9</p> | <p>10</p> |
| <p>11</p> | <p>12</p> | <p>13</p> | <p>14</p> | <p>15</p> |

| | | |
|-----------|-----------|-----------|
| <p>19</p> | <p>24</p> | <p>29</p> |
| <p>18</p> | <p>23</p> | <p>28</p> |
| <p>17</p> | <p>22</p> | <p>27</p> |
| <p>16</p> | <p>21</p> | <p>26</p> |
| <p>15</p> | <p>20</p> | <p>25</p> |

TABLE 7-43. WINDING DATA

TABLE 7-43. WINDING DATA

NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A

CORRECTIVE
MAINTENANCE

| | | | | |
|-----------|-----------|-----------|-----------|-----------|
| <p>30</p> | <p>31</p> | <p>32</p> | <p>33</p> | <p>34</p> |
| <p>35</p> | <p>36</p> | <p>37</p> | <p>38</p> | <p>39</p> |
| <p>40</p> | <p>41</p> | <p>42</p> | <p>43</p> | |

TABLE 7-43. WINDING DATA

| | | | | |
|---|---|---|---|---|
| <p>23 TURNS TOTAL 1/2" MIN 1/2" MIN 1 TURN 3/8" 21 TURNS 1 TURN</p> <p>44</p> | <p>5/16"</p> <p>45</p> | <p>1/2"</p> <p>46</p> | <p>53 TURNS 228 TURNS 314 TURNS</p> <p>47</p> | <p>17" MAX 32 1/2" MIN 1/32" 1/2"</p> <p>48</p> |
| <p>15/16" 5/32" 13/32"</p> <p>49</p> | <p>3/8" MIN 1/32" 5/8 + 1/32"</p> <p>50</p> | <p>17" MAX 32 1/2" MIN 3/16" 1/2"</p> <p>51</p> | <p>1/4" 5/32" 13/32"</p> <p>52</p> | <p>COIL A 13/16"</p> <p>53</p> |
| <p>5/16" 5/32" 13/32"</p> <p>54</p> | <p>11/32" 5/32" 13/32"</p> <p>55</p> | <p>9/32" 5/32" 13/32"</p> <p>56</p> | <p>COIL COIL B A 1/8" 13/16" 3/4"</p> <p>57</p> | <p>COIL A COIL B 3/4"</p> <p>58</p> |

TABLE 7-43. WINDING DATA

| | | | | |
|-----------|-----------|-----------|-----------|-----------|
| <p>59</p> | <p>60</p> | <p>61</p> | <p>62</p> | <p>63</p> |
| <p>64</p> | <p>65</p> | <p>66</p> | <p>67</p> | <p>68</p> |
| <p>69</p> | <p>70</p> | <p>71</p> | <p>72</p> | <p>73</p> |
| <p>74</p> | <p>75</p> | <p>75</p> | | |

- NOTES:
- IN AN/SRT-16, THE HEATERS IN THE TWO MOUNTINGS ARE INDIVIDUALLY ENERGIZED FROM THE CABINET HEATER SWITCH (NN) IN EACH TRANSMITTER GROUP. IN AN/SRT-15 THE HEATERS IN THE TWO MOUNTINGS ARE IN PARALLEL.
 - RESISTANCE VALUES EXPRESSED IN OHMS UNLESS OTHERWISE INDICATED.
 - SEE ANTENNA COUPLER AND RADIO FREQUENCY TUNER CONTROL CIRCUITS FOR INTERCONNECTING DATA BETWEEN TRANSMITTER GROUP AND ANTENNA COUPLER.
 - COLOR CODE--R-RED, Y-YELLOW, GR-GREEN, BU-BLUE.
 - (---) DENOTES INTERCONNECTING CABLING, FOR DETAILS SEE INTERCONNECTING CABLING DIAGRAMS IN SECTION 3 OF INSTRUCTION BOOK.
 - OTHER CONNECTIONS IN 500W STACK ARE THE SAME AS 100W STACK.
 - IN AN/SRT-14, JUMPERS ARE PLACED BETWEEN E606(76) AND E606(77) AND BETWEEN E608(1) AND E608(2).

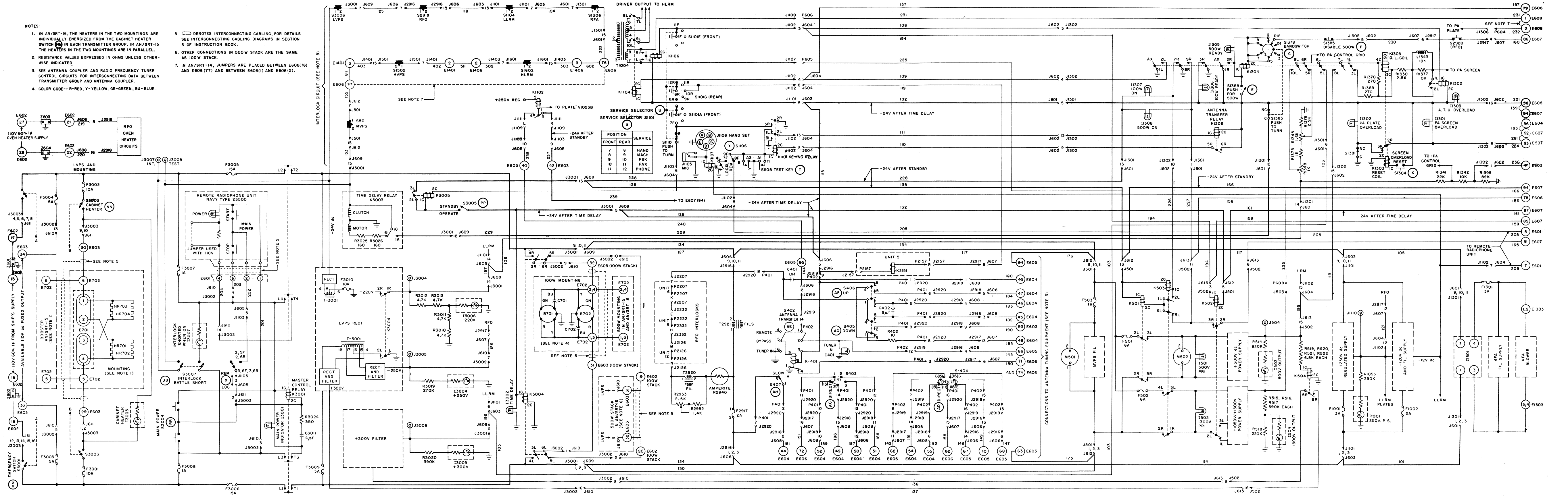
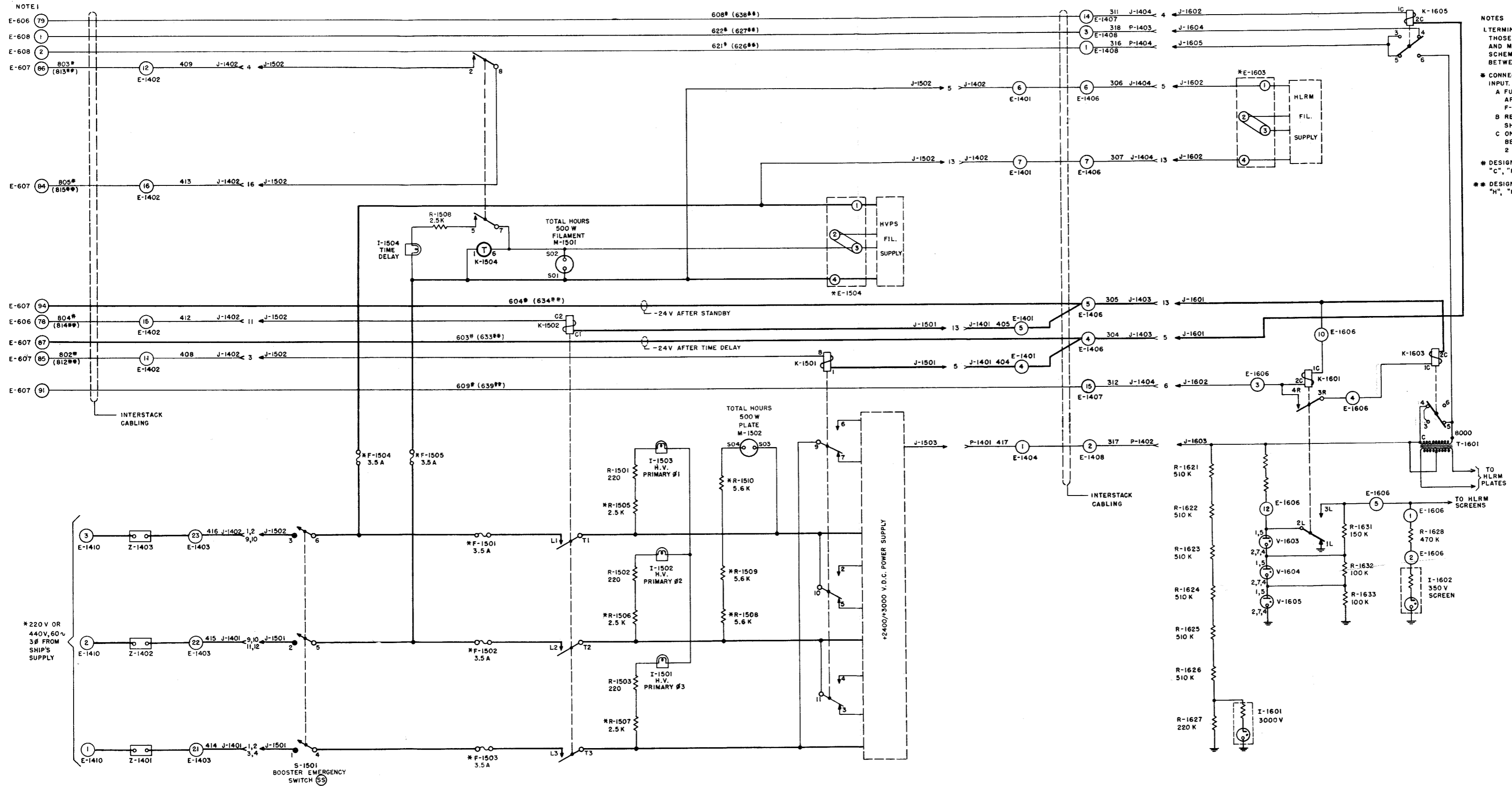


Figure 7-114. Transmitter Group OA-684/SRT and Mounting AT-1423/SRT, Control Circuit, Simplified Schematic

CORRECTIVE MAINTENANCE

NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A



NOTE 1

TERMINALS AT LEFT EDGE OF SHEET ARE DUPLICATE OF THOSE AT RIGHT EDGE OF TRANSMITTER GROUP AND MOUNTING CONTROL CIRCUITS SIMPLIFIED SCHEMATIC (FIGURE 7-114), KEY UP TO TRACE BETWEEN SHEETS.

* CONNECTIONS ARE SHOWN FOR 440VOLT 3 PHASE INPUT. FOR 220 VOLT 3 PHASE INPUT, A FUSE F-1506 THROUGH F-1510 (6.25A EACH) ARE SUBSTITUTED FOR F-1501 THROUGH F-1505 RESPECTIVELY.

B RESISTORS R-1505 THROUGH R-1510 ARE SHORTED OUT BY MEANS OF LINKS.

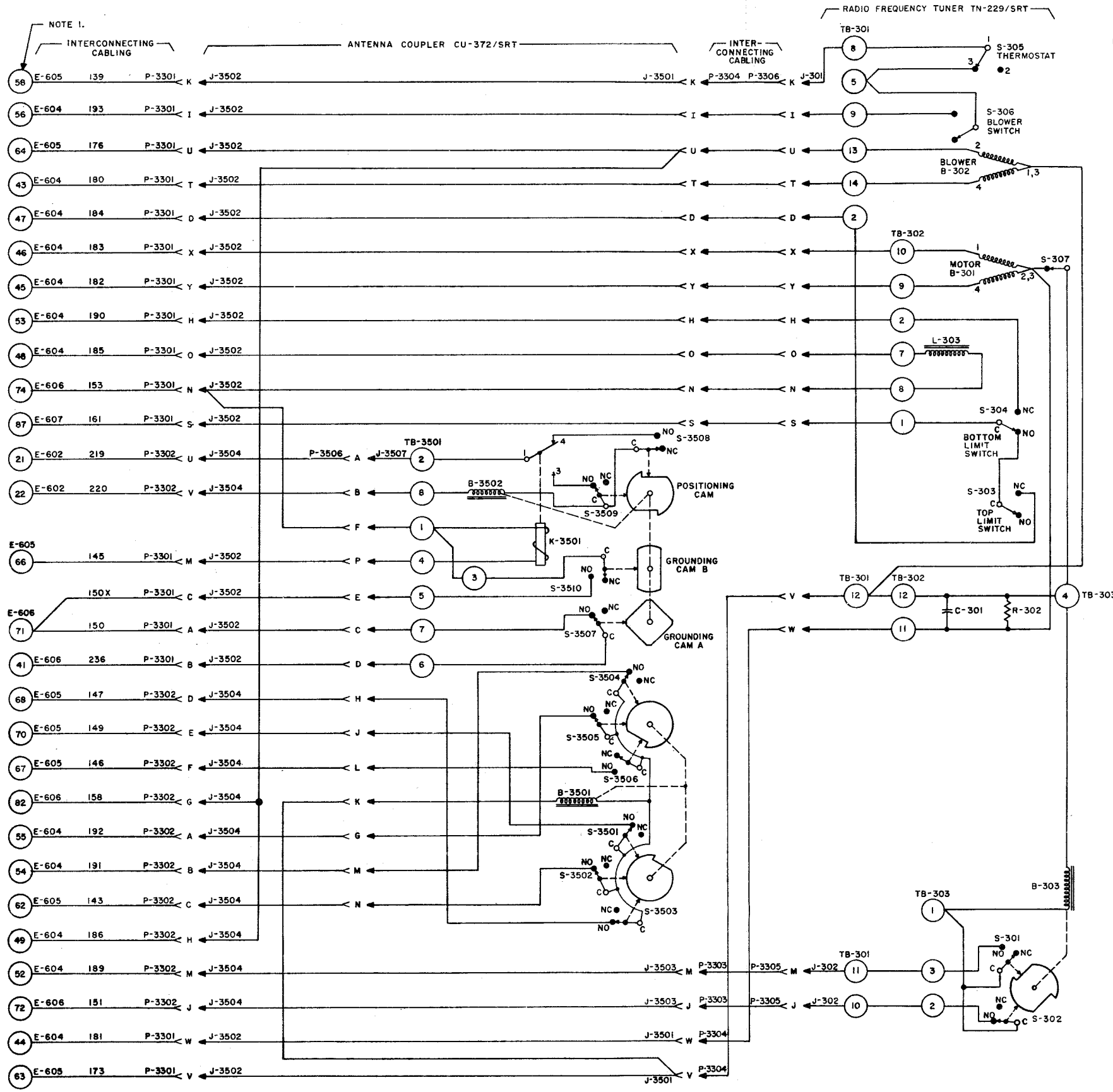
C ON E-1504 AND E-1603, LINKS ARE USED BETWEEN TERMINALS 1 AND 3 AND BETWEEN 2 AND 4.

* DESIGNATE WIRE NUMBERS IN INTERSTACK CABLES "C", "F" AND "G" USED IN AN/SRT-15.

* DESIGNATE WIRE NUMBERS IN INTERSTACK CABLES "H", "R" AND "S" USED IN AN/SRT-16.

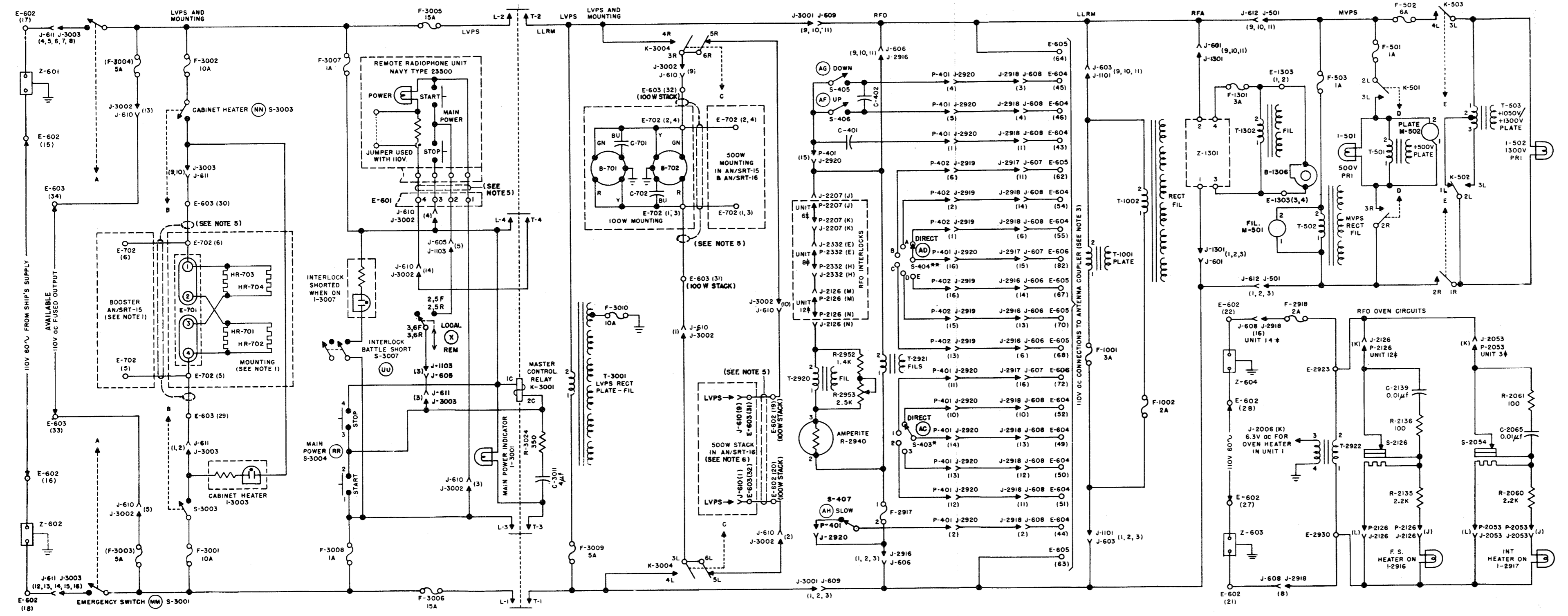
Figure 7-115. Radio Modulator-Power Supply Group OA-685/SRT, Control Circuits, Simplified Schematic

ORIGINAL



NOTES:-
1. TERMINALS AT LEFT EDGE OF SHEET ARE DUPLICATE OF THOSE FOUND ON THE TRANSMITTER GROUP AND MOUNTING CONTROL CIRCUITS SIMPLIFIED SCHEMATIC (FIGURE 7-114). TO TRACE ANY CIRCUIT MATCH TERMINAL NUMBERS ON EACH DRAWING.

Figure 7-116. Antenna Coupler CU-372/SRT, and R-F Tuner TN-229/SRT, Control Circuits, Simplified Schematic



| ABBREVIATION | COMMON NAME | OFFICIAL DESIGNATION | SYMBOL GROUP |
|--------------|------------------------------------|----------------------------|----------------------|
| LVPS | LOW VOLTAGE POWER SUPPLY | PP-1094/SRT | 3001-3099 |
| MVPS | MEDIUM VOLTAGE POWER SUPPLY | PP-1095/SRT | 501-599 |
| RFO | RADIO FREQUENCY OSCILLATOR | O-275/SRT | 401-499 2001-2999 |
| LLRM | LOW LEVEL RADIO MODULATOR | MD-229/SRT | 1001-1299 |
| RFA | RADIO FREQUENCY AMPLIFIER | AM-1008/SRT | 1301-1399 |
| | TRANSMITTER GROUP CABINET MOUNTING | CY-1571/SRT MT-1423/SRT | 601-699 |

- NOTES:
- IN AN/SRT-16 THE HEATERS IN THE TWO MOUNTINGS ARE INDIVIDUALLY ENERGIZED FROM THE CABINET HEATER SWITCH IN EACH TRANSMITTER GROUP. IN AN/SRT-15 THE HEATERS IN THE TWO MOUNTINGS ARE IN PARALLEL.
 - RESISTANCE VALUES EXPRESSED IN OHMS UNLESS OTHERWISE INDICATED.
 - SEE PRIMARY POWER DISTRIBUTION DIAGRAM, ANTENNA COUPLER AND RADIO FREQUENCY TUNER FOR INTERCONNECTING DATA FOR PRIMARY POWER BETWEEN TRANSMITTER GROUP AND ANTENNA COUPLER.
 - COLOR CODE: R-RED, Y-YELLOW, GN-GREEN, BU-BLUE.
 - ⊞ DENOTES INTERCONNECTING CABLING. FOR DETAILS SEE INTERCONNECTING CABLING DIAGRAMS IN SECTION 3.
 - OTHER CONNECTIONS IN 500 W STACK ARE THE SAME AS 100 W STACK.
- ‡ UNIT 1, UNIT 3, UNIT 6, ETC. REFER TO PLUG-IN UNITS OF THE RADIO FREQUENCY OSCILLATOR, O-275/SRT
- * FRONT PANEL DESIGNATION OF S-403 IS AS FOLLOWS; TRANSFORMER (AC)
- ** FRONT PANEL DESIGNATION OF S-404 IS AS FOLLOWS; ANTENNA COUPLER LOADING (AD)

Figure 7-117. Primary Power Distribution Diagram, Transmitter Group and Mounting, AN/SRT-14, 15 and 16

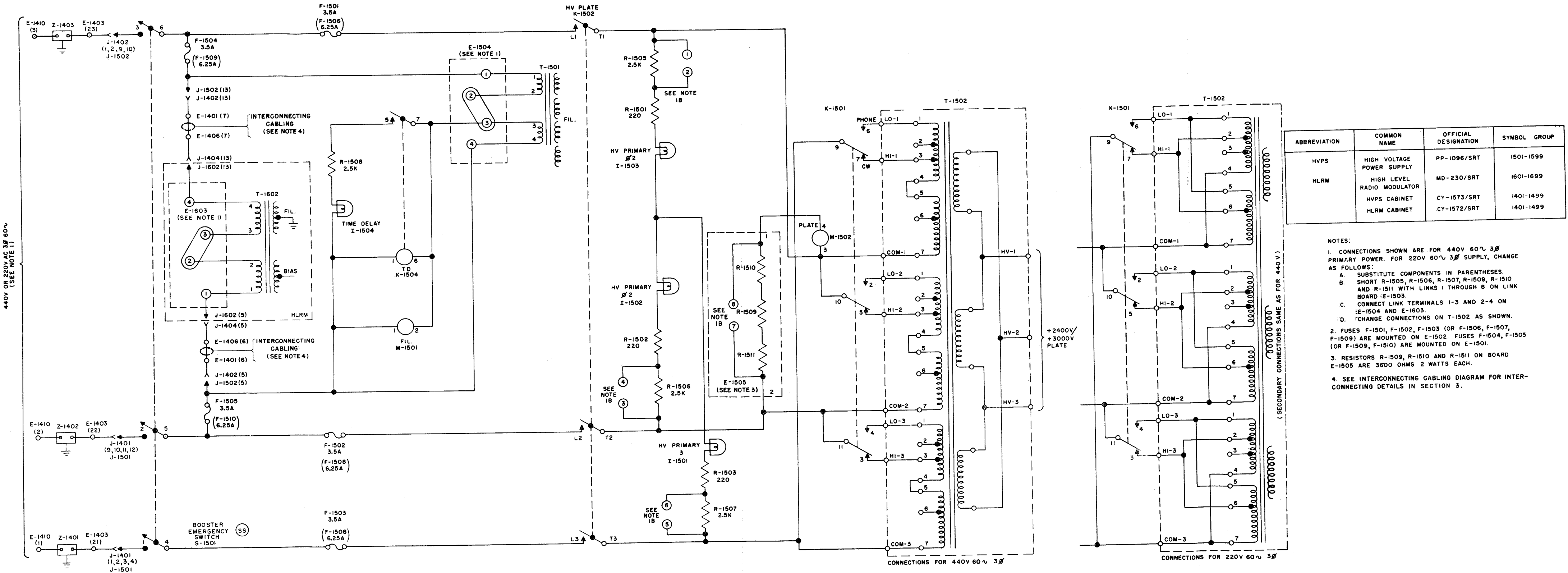
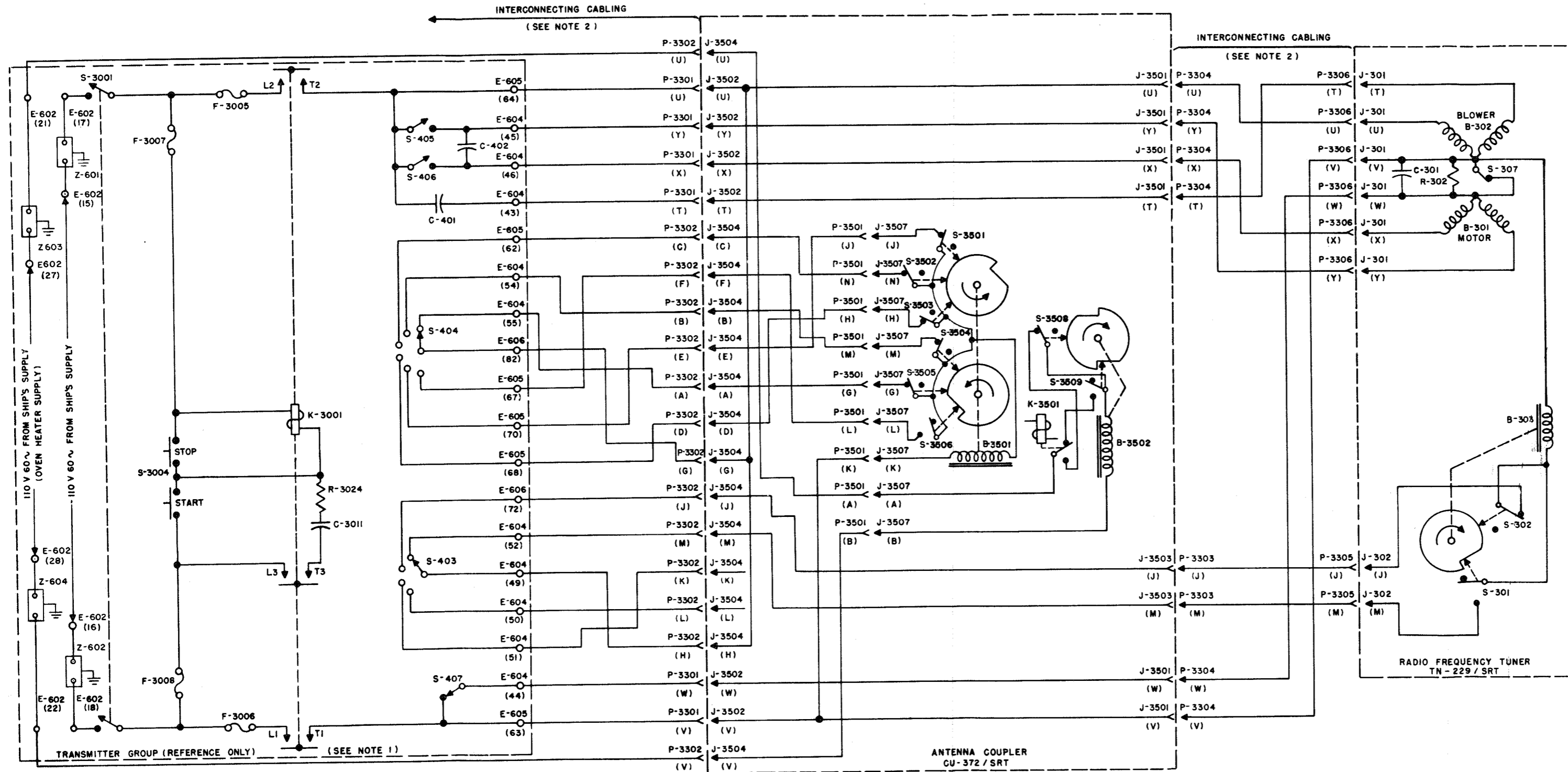
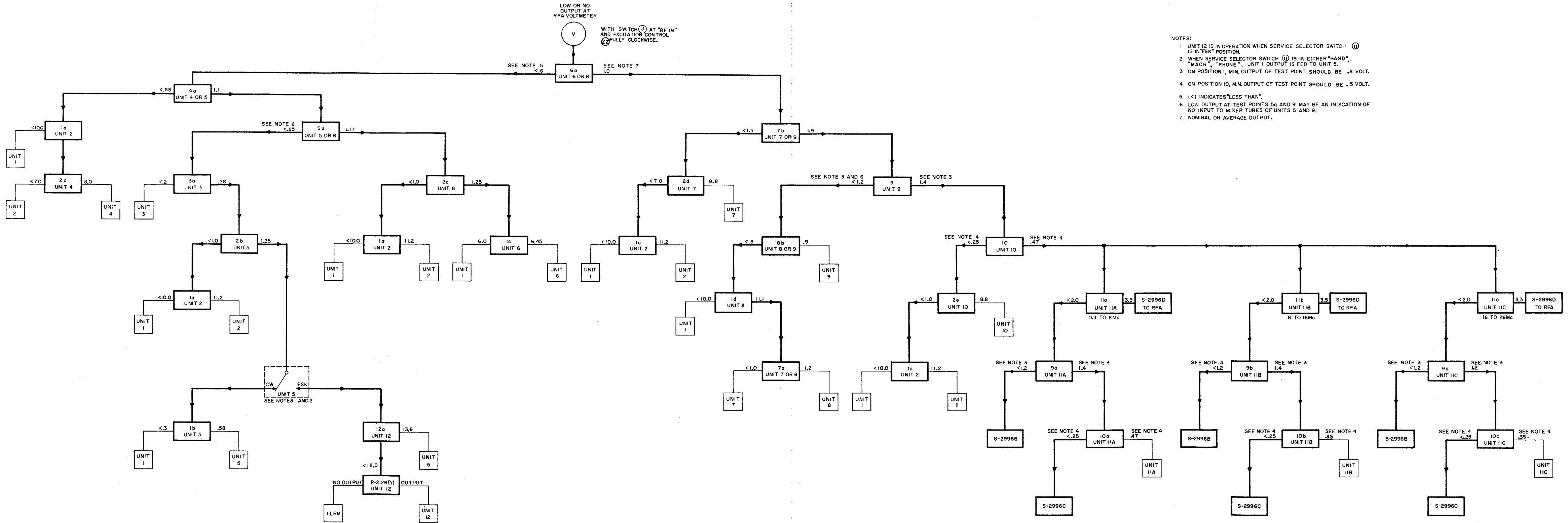


Figure 7-118. Primary Power Distribution Diagram, Modulator Power Supply Group and Mounting, AN/SRT-14, 15 and 16



- NOTES
1. SEE PRIMARY POWER DISTRIBUTION DIAGRAM, TRANSMITTER GROUP AND MOUNTING, FOR DETAIL OF CONNECTIONS. FIGURE 7-117.
 2. SEE INTERCONNECTING CABLING DIAGRAM FOR INTERCONNECTING DETAILS. IN SECTION 3.

Figure 7-119. Primary Power Distribution Diagram, Antenna Tuning Equipment, AN/SRT-14, 15 and 16



- NOTES:
1. UNIT 12 IS IN OPERATION WHEN SERVICE SELECTOR SWITCH (J) IS IN "FSK" POSITION.
 2. WHEN SERVICE SELECTOR SWITCH (J) IS IN EITHER "HAND", "MACH", "PHONE", UNIT 1 OUTPUT IS FED TO UNIT 5.
 3. ON POSITION I, MIN. OUTPUT OF TEST POINT SHOULD BE .8 VOLT.
 4. ON POSITION IO, MIN. OUTPUT OF TEST POINT SHOULD BE .15 VOLT.
 5. (<) INDICATES "LESS THAN".
 6. LOW OUTPUT AT TEST POINTS 5a AND 9 MAY BE AN INDICATION OF NO INPUT TO MIXER TUBES OF UNITS 5 AND 9.
 7. NOMINAL OR AVERAGE OUTPUT.

Figure 7-120. Radio Frequency Oscillator O-275/SRT (RFO), Simplified Trouble Location, Block Diagram

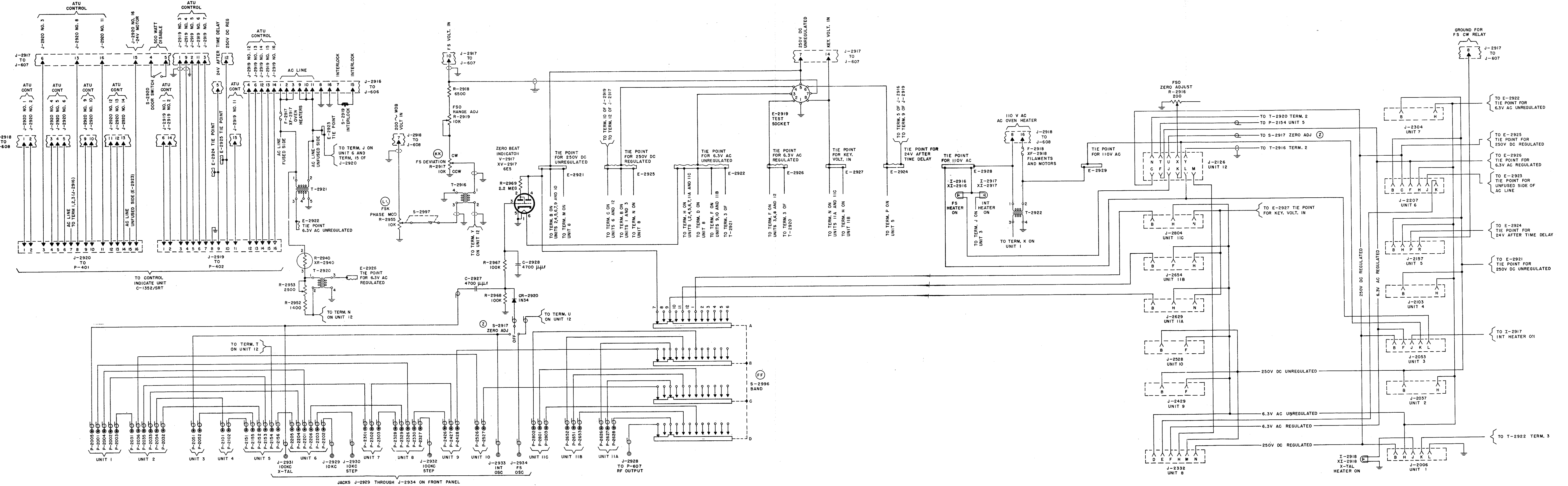


Figure 7-121. RFO, Unit 14 (Z-2901), Schematic Diagram

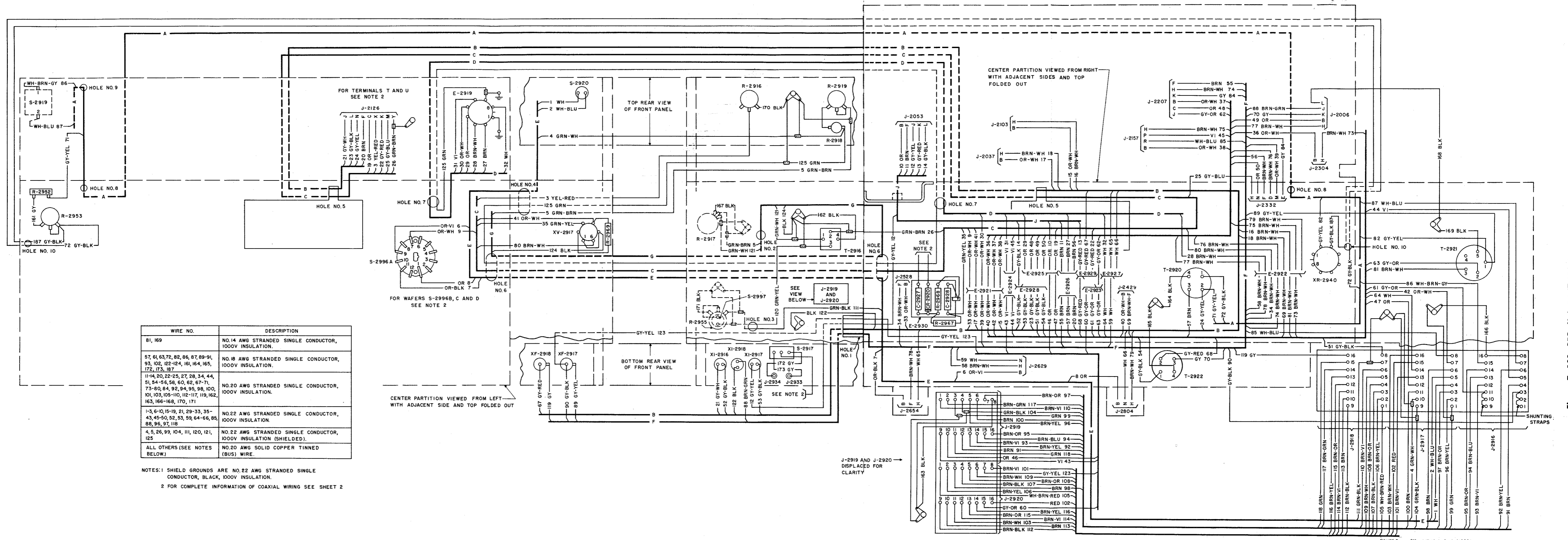


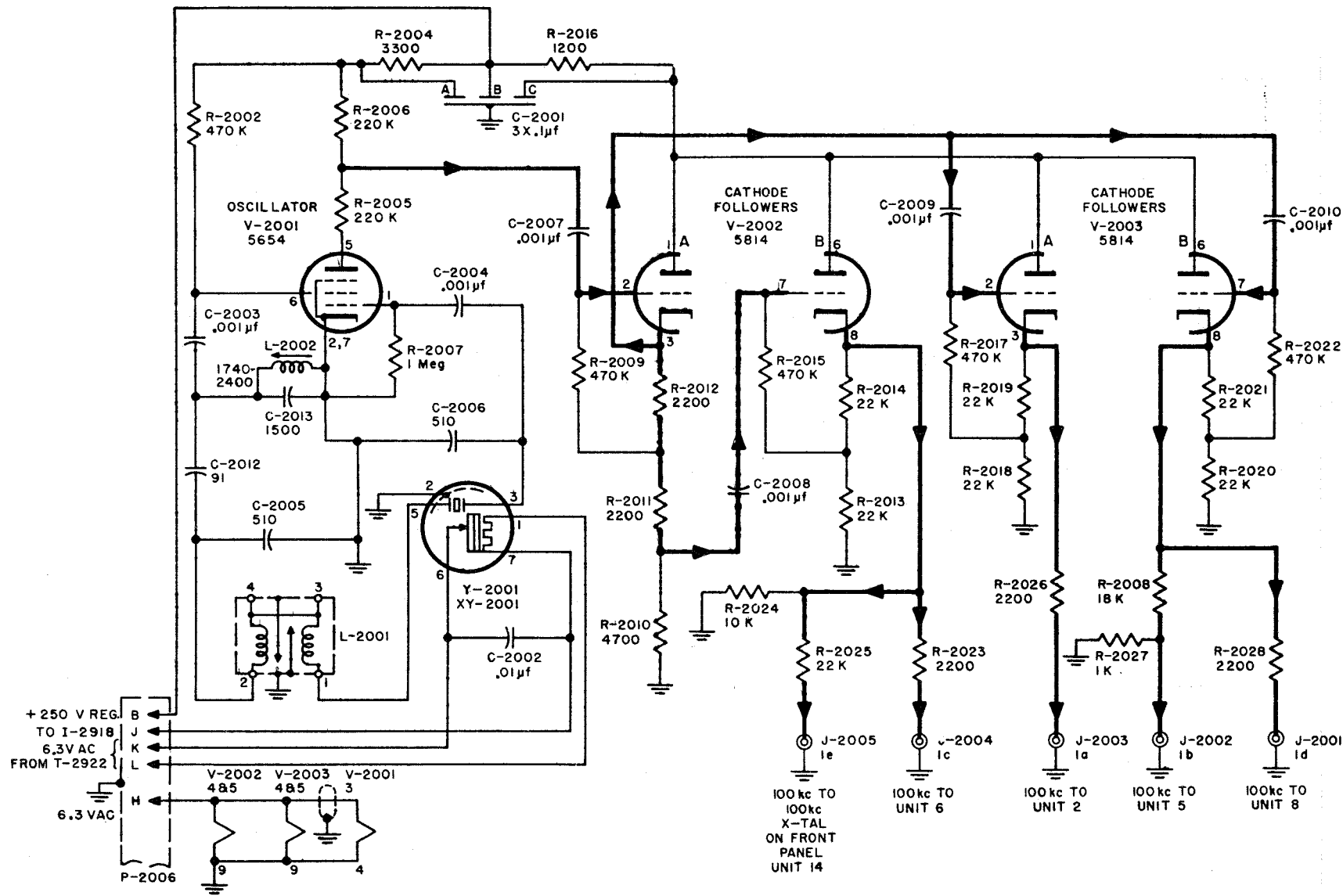
Figure 7-122. RFO, Unit 14 (Z-2901), Wiring Diagram (Sheet 1 of 2)

**COAXIAL INTERCONNECTIONS
FOR RFO UNIT 14, (Z-2901)**

| CABLE TAG NO. | CABLE TYPE | FROM | | TO | |
|------------------|---------------|------|------------|------|-------------------|
| | | UNIT | CONN | UNIT | CONN |
| 1a | RG-58/U | 1 | J-2003 | 2 | J-2031 |
| 1b | " | 1 | J-2002 | 5 | J-2153 |
| 1c | " | 1 | J-2004 | 6 | J-2201 |
| 1d | " | 1 | J-2001 | 8 | J-2326 |
| 1e | " | 1 | J-2005 | * | J-2931 |
| 2a | " | 2 | J-2034 | 4 | J-2101 |
| 2b | " | 2 | J-2032 | 5 | J-2152 |
| 2c | " | 2 | J-2033 | 6 | J-2204 |
| 2d | " | 2 | J-2035 | 7 | J-2301 |
| 2e | " | 2 | J-2036 | 10 | J-2526 |
| 3a | " | 3 | J-2052 | 5 | J-2155 |
| 3b | " | 3 | J-2051 | * | J-2933 |
| 4a | " | 4 | J-2102 | 5 | J-2151 |
| 214 | " | * | S-2917 (C) | * | CR-2920 E-2930 |
| 5a | " | 5 | J-2156 | 6 | J-2205 |
| 6a | " | 6 | J-2203 | * | J-2930 |
| 6b | " | 6 | J-2206 | 8 | J-2329 |
| 6c | " | 6 | J-2202 | * | J-2929 |
| 7a | " | 7 | J-2303 | 8 | J-2328 |
| 7b | " | 7 | J-2302 | 9 | J-2427 |
| 8a | " | 8 | J-2327 | * | J-2932 |
| 8b | " | 8 | J-2330 | 9 | J-2426 |
| 9 | " | 9 | J-2428 | * | S-2996 B-7 |
| 9a | " | 11A | J-2626 | * | S-2996 B-9 |
| 9b | " | 11B | J-2652 | * | S-2996 B-11 |
| 9c | " | 11C | J-2802 | * | S-2996 B-1 |
| 10 | " | 10 | J-2527 | * | S-2996 C-7 |
| 10a | " | 11A | J-2627 | * | S-2996 C-9 |
| 10b | " | 11B | J-2651 | * | S-2996 C-11 |
| 10c | RG-58/U | 11C | J-2801 | * | S-2996 C-1 |
| 11 | RG-62/U | * | J-2928 | * | S-2996 D-7 |
| 11a | " | 11A | J-2628 | * | S-2996 D-9 |
| 11b | " | 11B | J-2653 | * | S-2996 D-11 |
| 11c | RG-62/U | 11C | J-2803 | * | S-2996 D-1 |
| 12a | RG-58/U | 12 | J-2126-T | 5 | J-2154 |
| 236 | RG-58/U | * | J-2931 | * | C-2927 E-2930 |
| 237 | RG-58/U | 12 | J-2126-U | * | J-2934 |

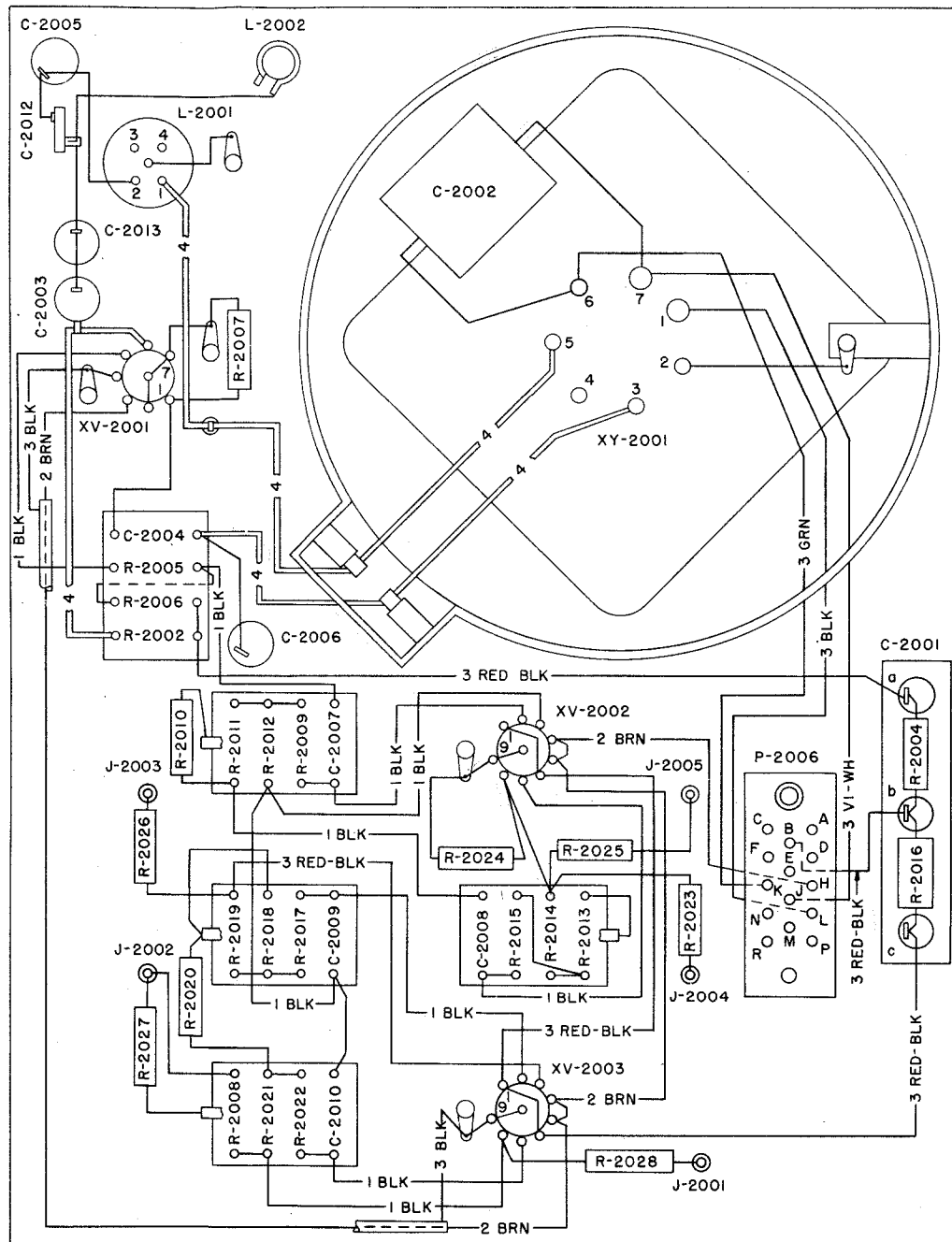
* DENOTES FRAME MOUNTED CONNECTOR

Figure 7-122. RFO, Unit 14 (Z-2901), Wiring Diagram (Sheet 2 of 2)



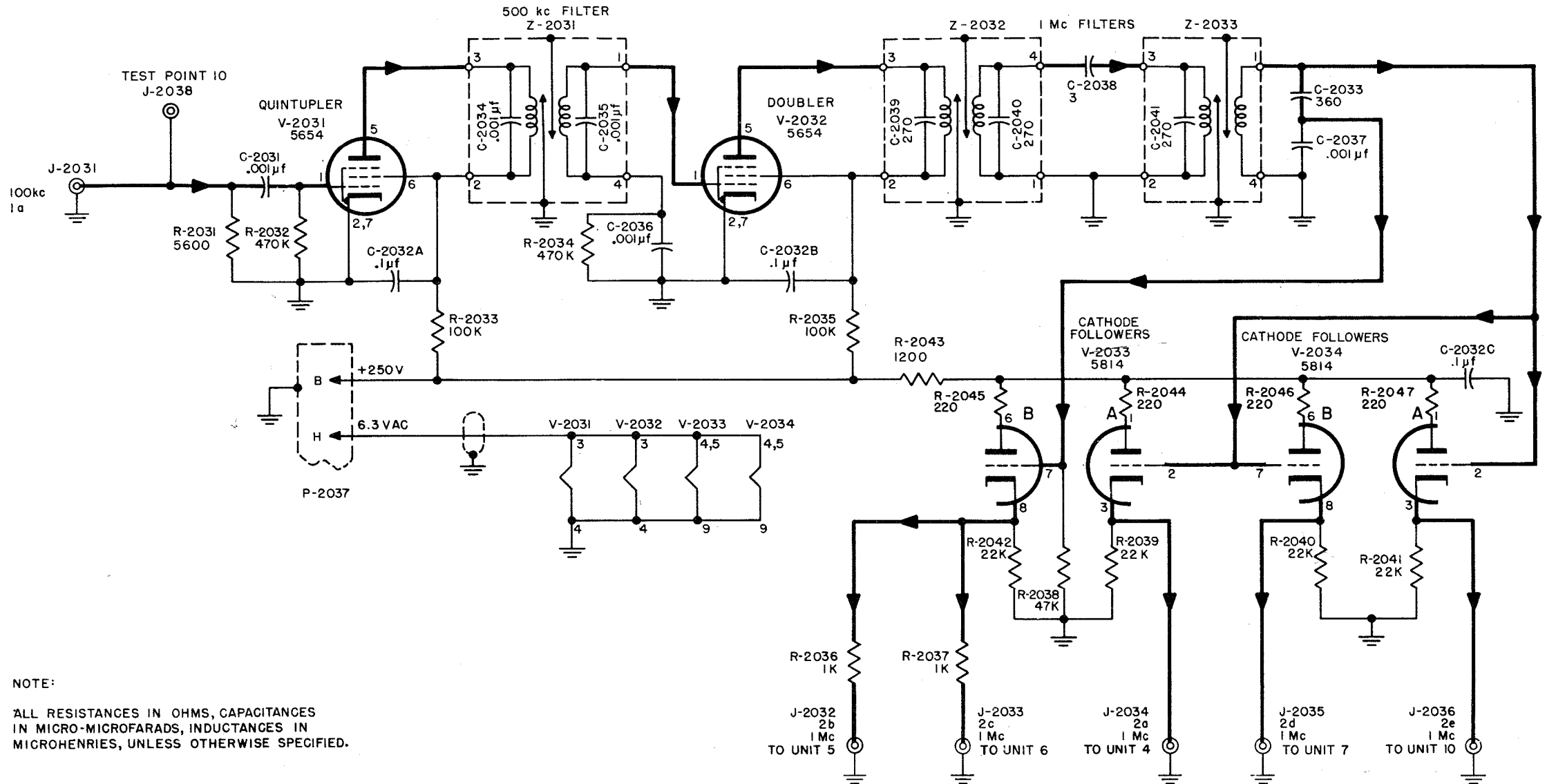
NOTE:
ALL RESISTANCES IN OHMS, CAPACITANCES
IN MICRO-MICROFARADS, INDUCTANCES IN
MICROHENRIES, UNLESS OTHERWISE SPECIFIED.

Figure 7-123. RFO, Unit 1 (Z-2001), Schematic Diagram



| WIRE NO. | DESCRIPTION |
|------------|---|
| 1 | NO. 20 AWG SOLID SINGLE CONDUCTOR, 1000V INSULATION |
| 2 | NO. 20 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION (SHIELDED) |
| 3 | NO. 22 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION |
| 4 | NO. 14 AWG SOLID BARE COPPER TINNED (BUS) WIRE |
| ALL OTHERS | NO. 20 AWG SOLID COPPER TINNED (BUS) WIRE |

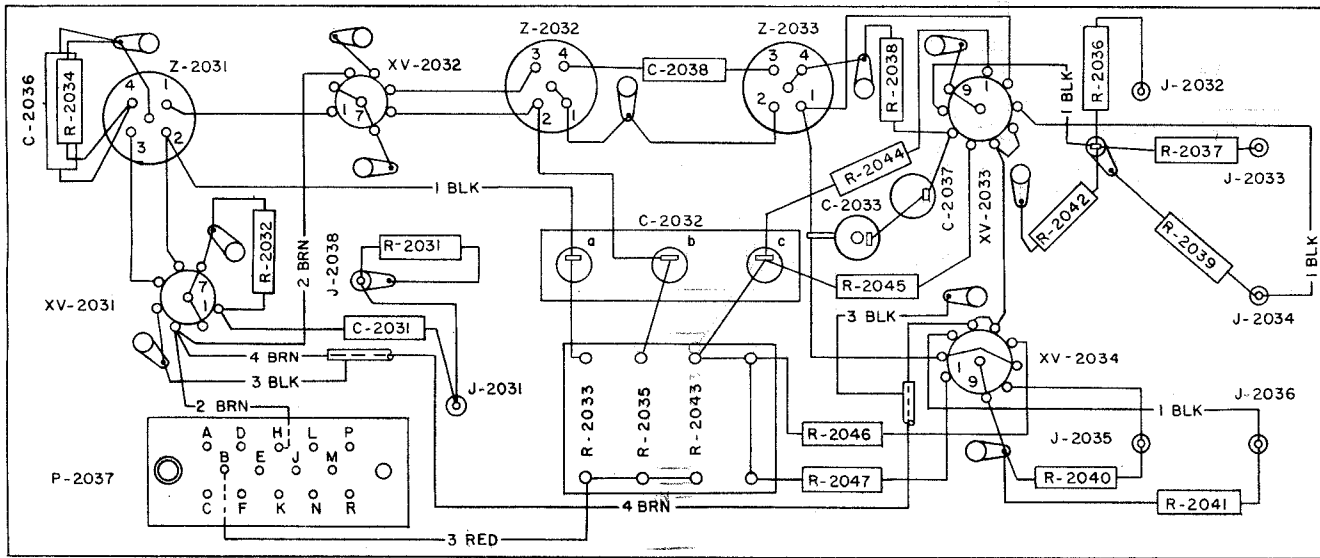
Figure 7-124. RFO, Unit 1 (Z-2001), Wiring Diagram



NOTE:

ALL RESISTANCES IN OHMS, CAPACITANCES
IN MICRO-MICROFARADS, INDUCTANCES IN
MICROHENRIES, UNLESS OTHERWISE SPECIFIED.

Figure 7-125. RFO, Unit 2 (Z-2034), Schematic Diagram



| WIRE NO. | DESCRIPTION |
|------------|---|
| 1 | NO. 20 AWG SOLID SINGLE CONDUCTOR, 1000V INSULATION |
| 2 | NO. 20 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION |
| 3 | NO. 22 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION |
| 4 | NO. 20 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION (SHIELDED) |
| ALL OTHERS | NO. 20 AWG SOLID COPPER TINNED (BUS) WIRE |

Figure 7-126. RFO, Unit 2 (Z-2034), Wiring Diagram

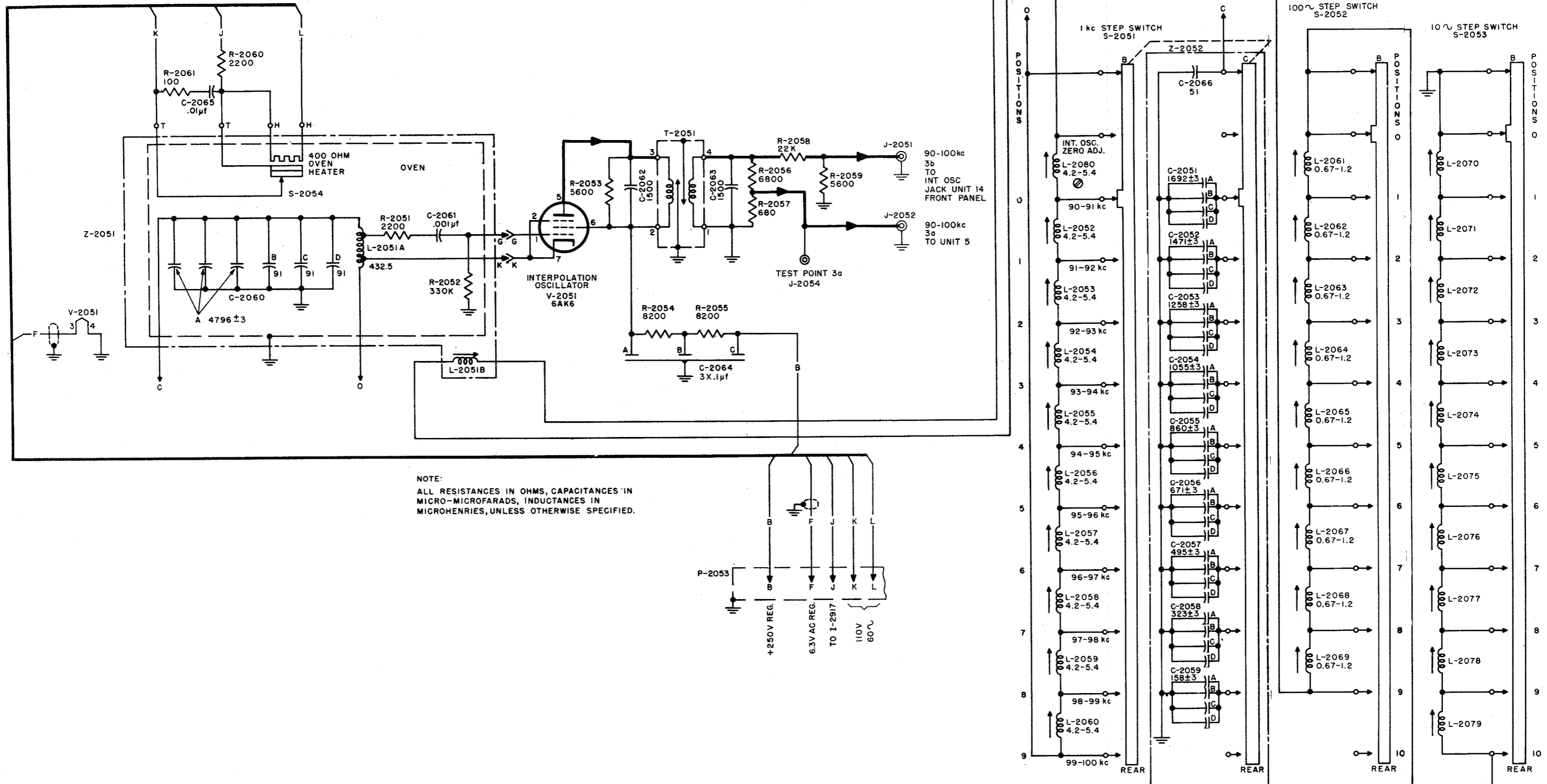
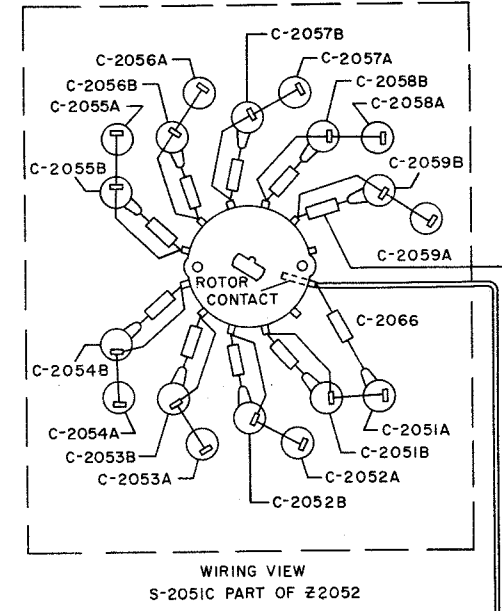
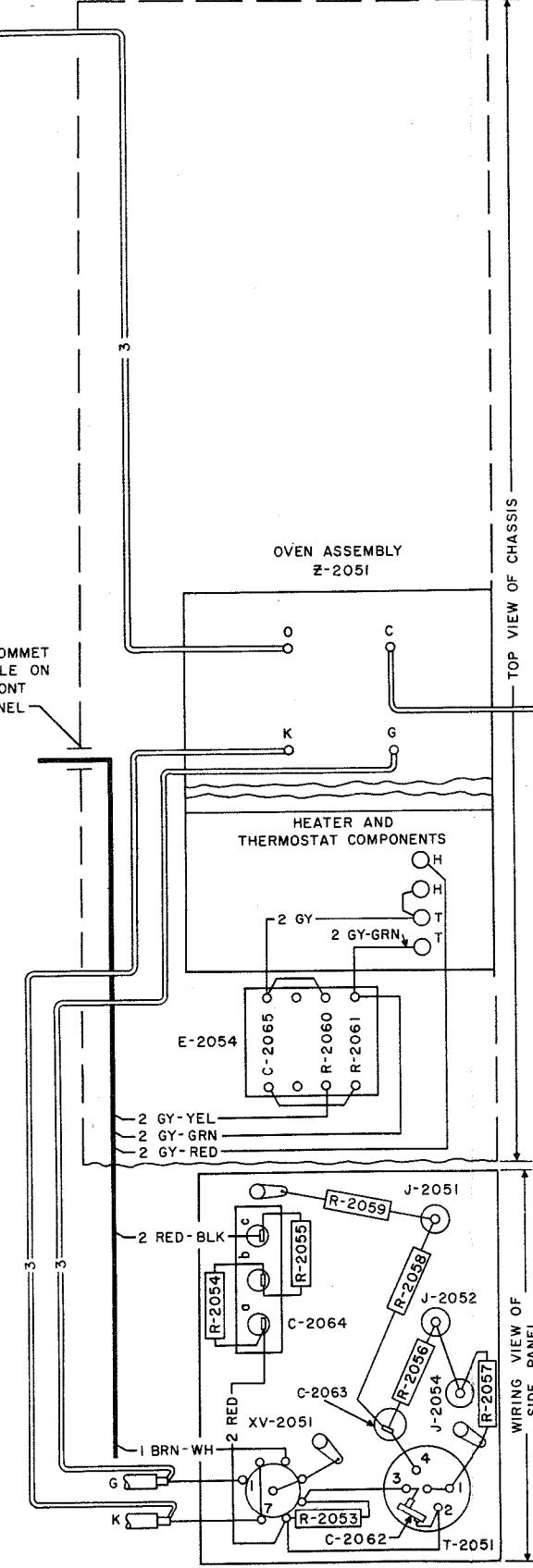
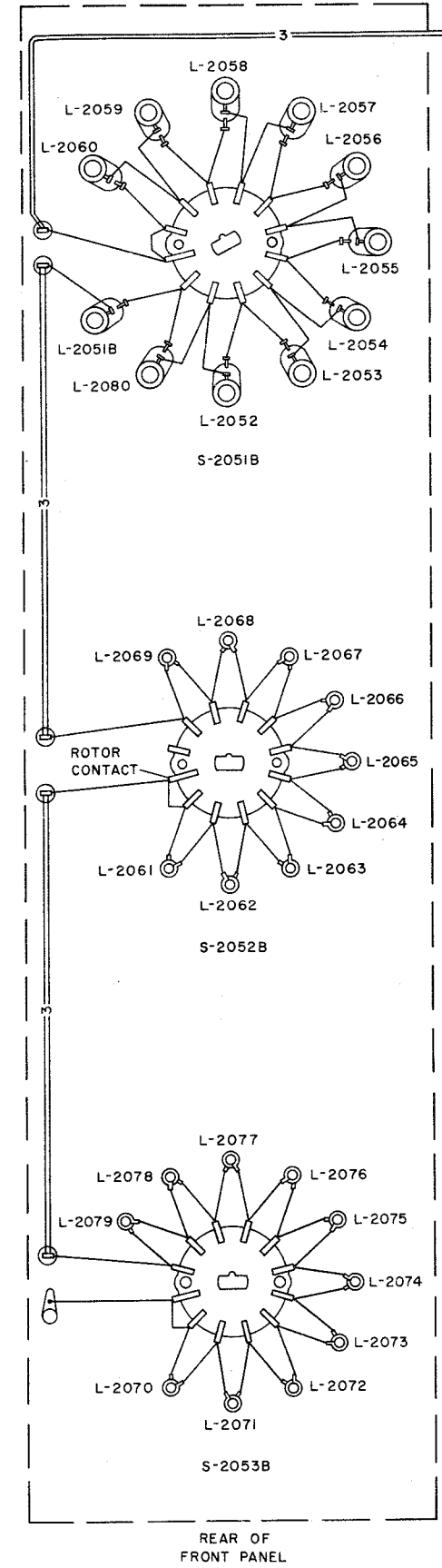
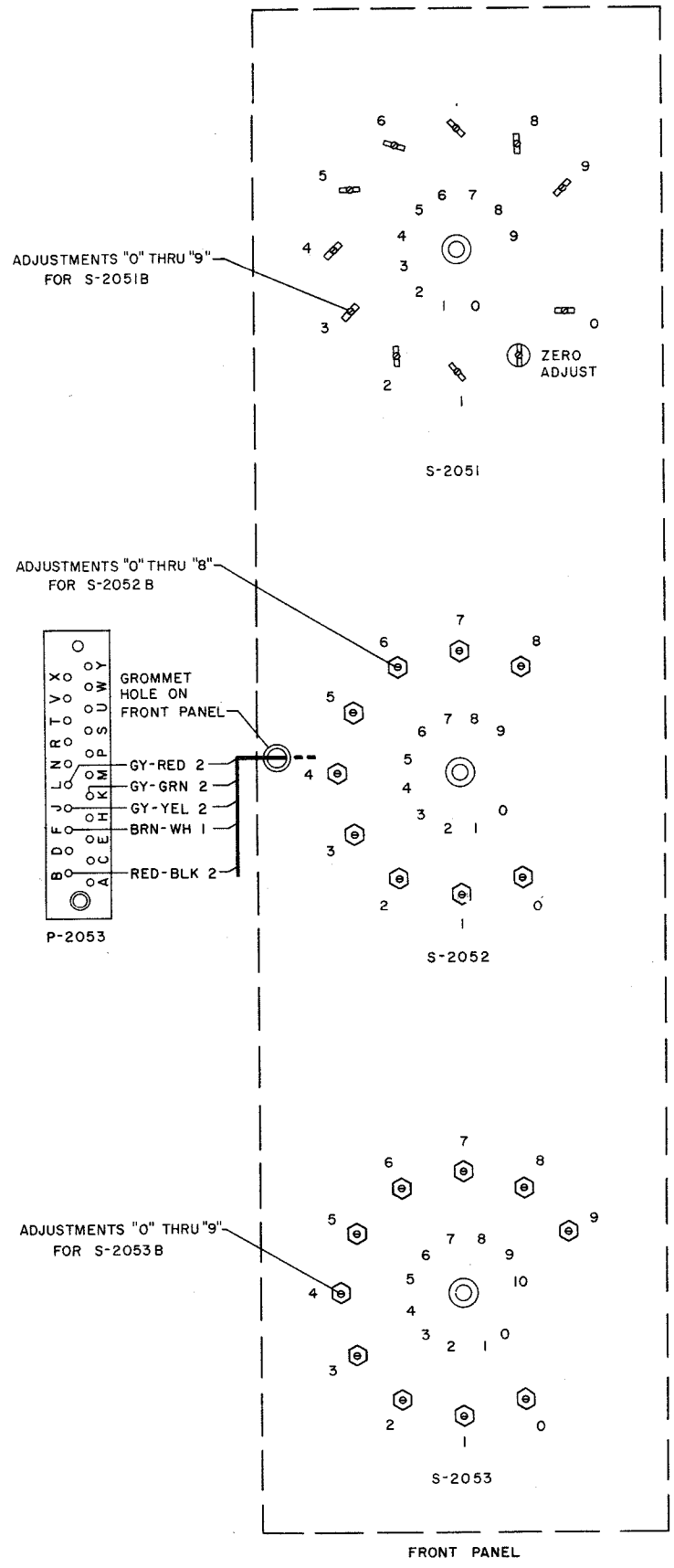


Figure 7-127. RFO, Unit 3 (Z-2053), Schematic Diagram

CORRECTIVE MAINTENANCE

NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A

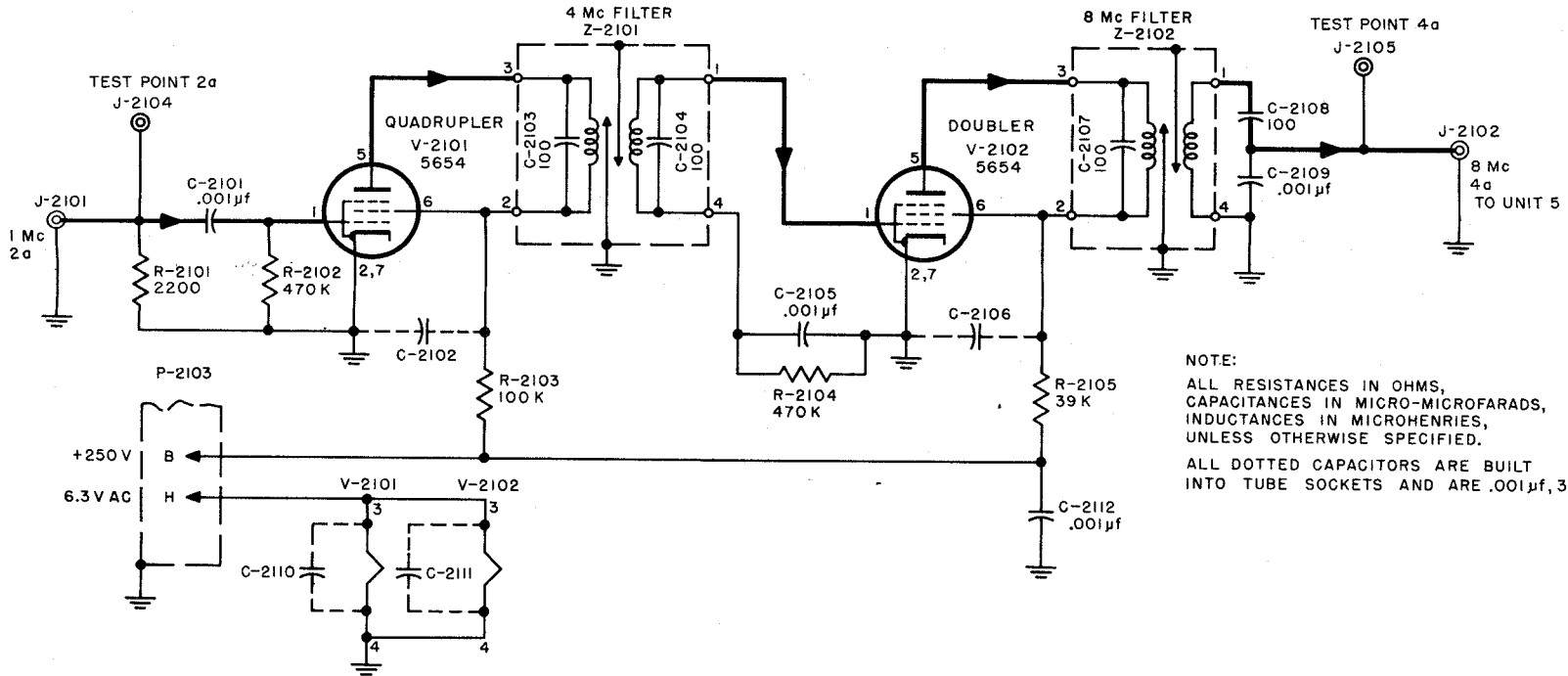


| WIRE NO. | DESCRIPTION |
|------------|--|
| 1 | NO. 20 AWG STRANDED SINGLE CONDUCTOR 1000V INSULATION |
| 2 | NO. 22 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION |
| 3 | NO. 14 AWG SOLID COPPER TINNED (BUS) WIRE |
| 4 | NO. 16 AWG SOLID COPPER TINNED (BUS) WIRE |
| ALL OTHERS | NO. 20 AWG SOLID COPPER TINNED (BUS) WIRE |

ORIGINAL

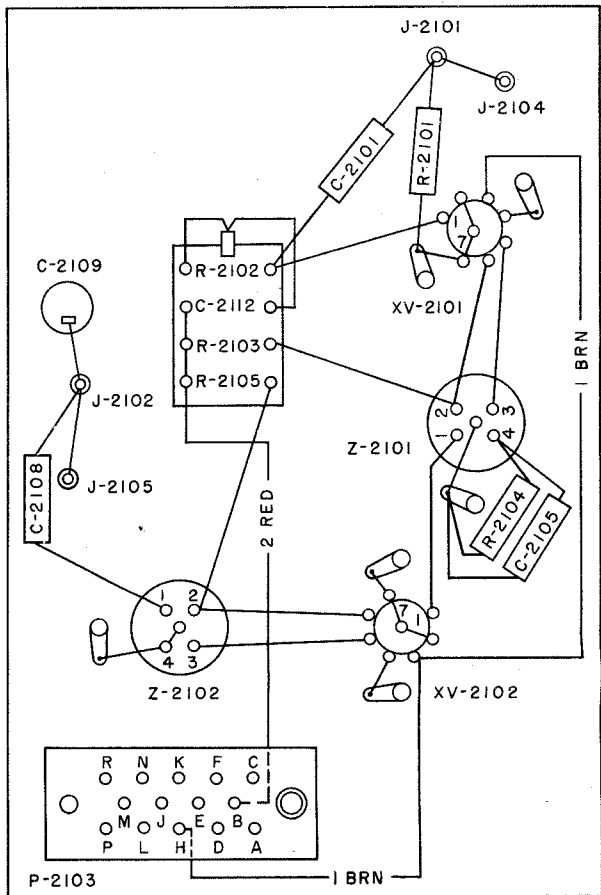
7-191/7-192

Figure 7-128. RFO, Unit 3 (Z-2053), Wiring Diagram



NOTE:
ALL RESISTANCES IN OHMS,
CAPACITANCES IN MICRO-MICROFARADS,
INDUCTANCES IN MICROHENRIES,
UNLESS OTHERWISE SPECIFIED.
ALL DOTTED CAPACITORS ARE BUILT
INTO TUBE SOCKETS AND ARE .001 μf, 350 VDCW.

Figure 7-129. RFO, Unit 4 (Z-2103), Schematic Diagram



| WIRE NO. | DESCRIPTION |
|------------|--|
| 1 | NO.20 AWG STRANDED SINGLE CONDUCTOR, 1000 V INSULATION |
| 2 | NO.22 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION |
| ALL OTHERS | NO.20 AWG SOLID COPPER, TINNED (BUS) WIRE. |

Figure 7-130. RFO, Unit 4 (Z-2103), Wiring Diagram

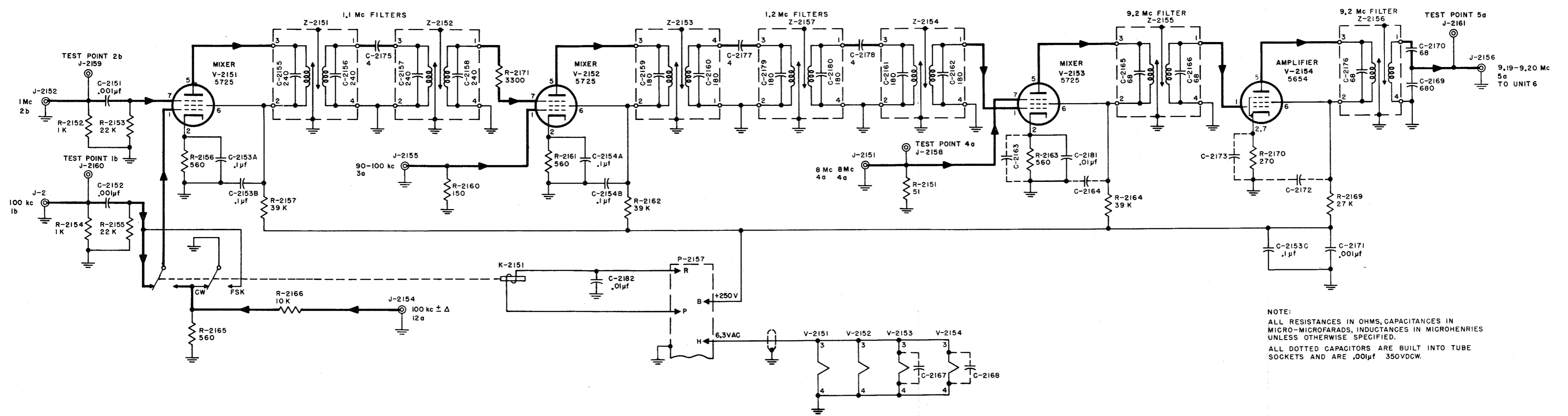


Figure 7-131. RFO, Unit 5 (Z-2158), Schematic Diagram

| WIRE NO. | DESCRIPTION |
|------------|--|
| 1 | NO. 20 AWG STRANDED SINGLE CONDUCTOR 1000 V INSULATION (SHIELDED AS INDICATED) |
| 2 | NO. 22 AWG STRANDED SINGLE CONDUCTOR 1000 V INSULATION |
| ALL OTHERS | NO. 20 AWG SOLID COPPER TINNED (BUS) WIRE |

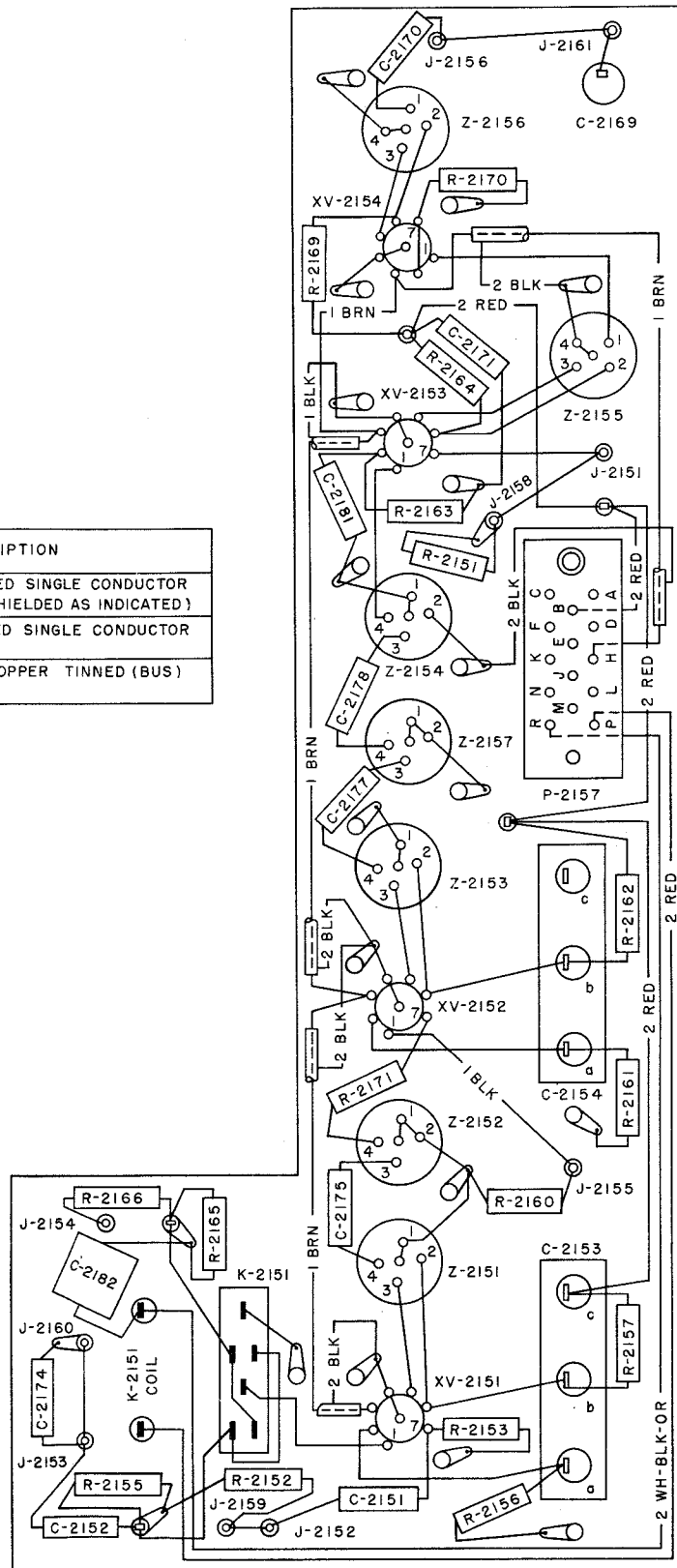
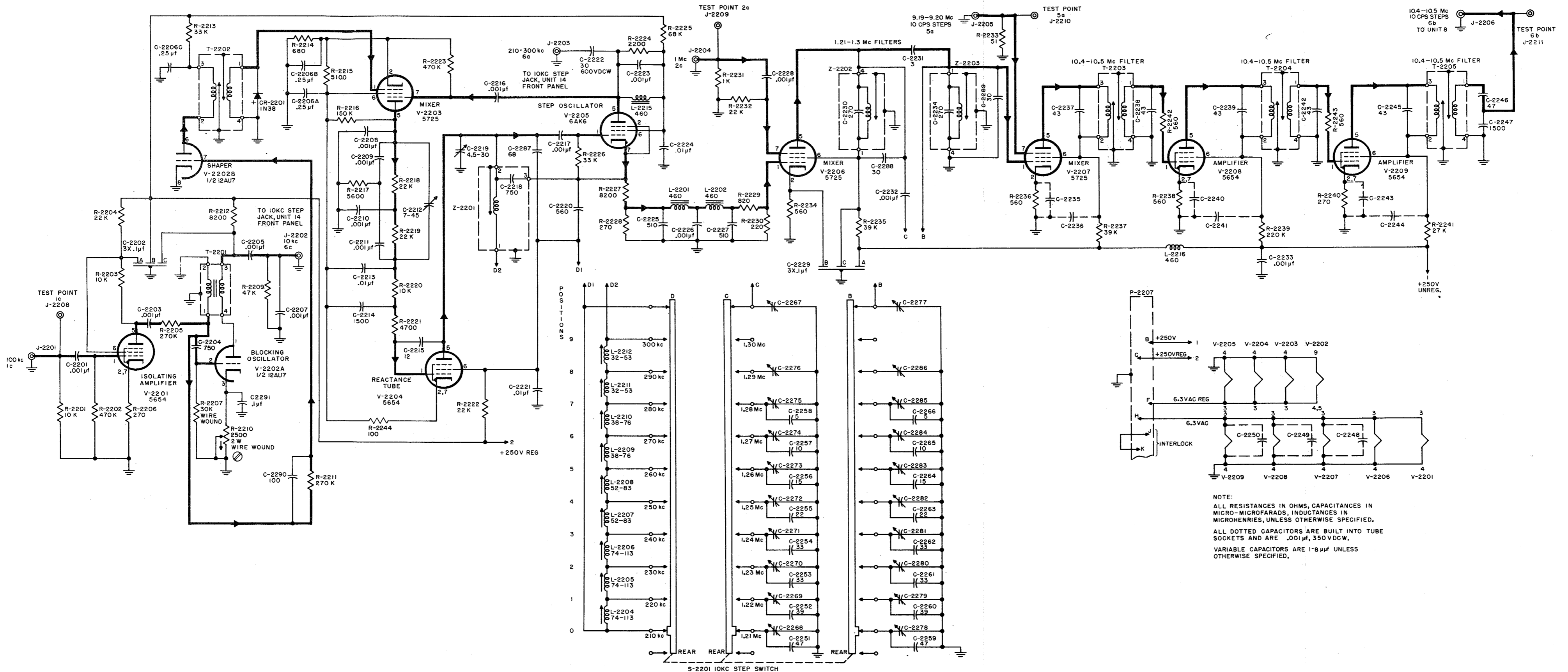


Figure 7-132. RFO, Unit 5 (Z-2158), Wiring Diagram

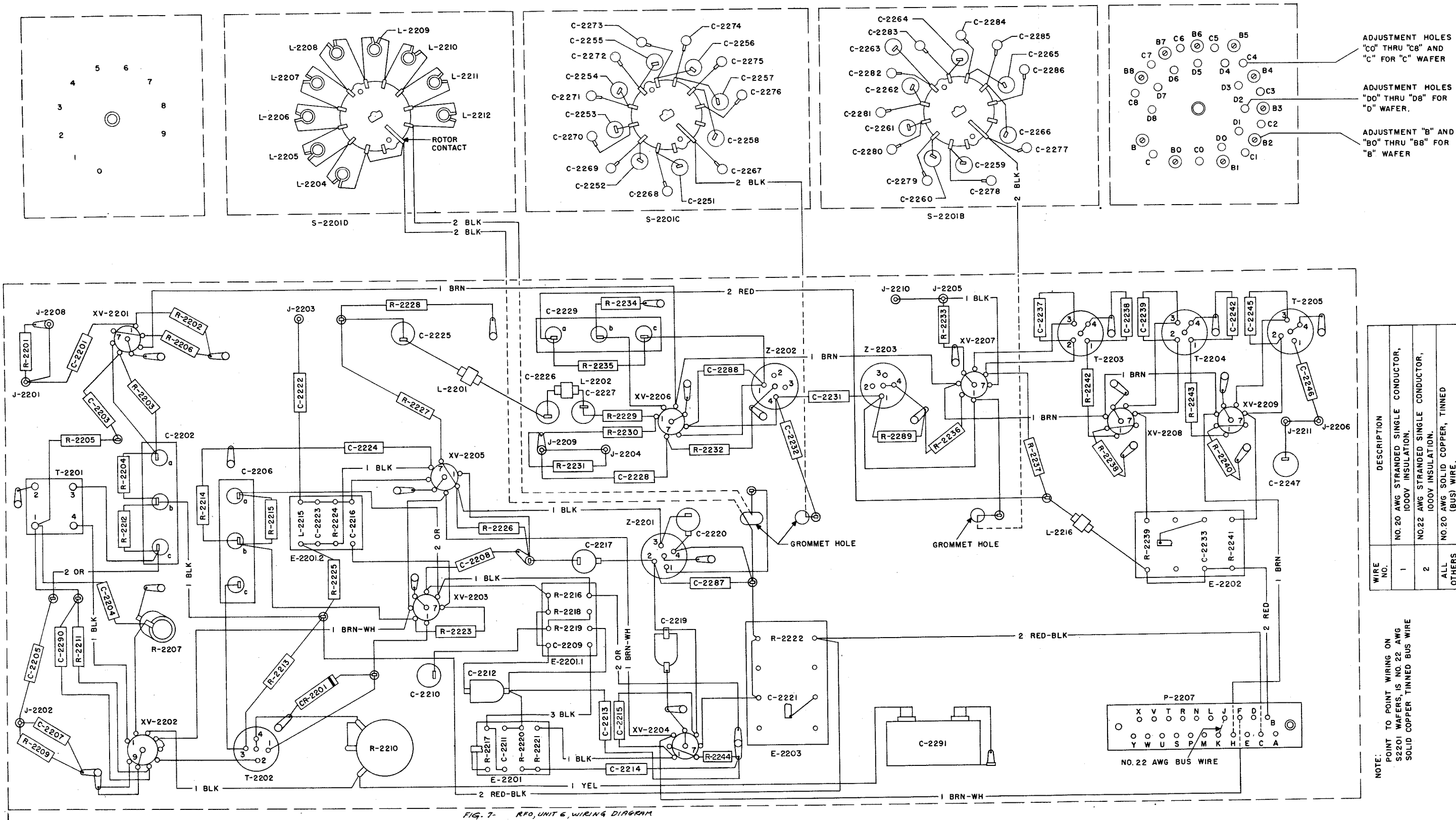


NOTE:
 ALL RESISTANCES IN OHMS, CAPACITANCES IN MICRO-MICROFARADS, INDUCTANCES IN MICROHENRIES, UNLESS OTHERWISE SPECIFIED.
 ALL DOTTED CAPACITORS ARE BUILT INTO TUBE SOCKETS AND ARE .001µf, 350 VDCW.
 VARIABLE CAPACITORS ARE 1-8 µf UNLESS OTHERWISE SPECIFIED.

Figure 7-133. RFO, Unit 6 (Z-2204), Schematic Diagram

**CORRECTIVE
MAINTENANCE**

**NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A**



ADJUSTMENT HOLES
"C0" THRU "C8" AND
"C" FOR "C" WAFER

ADJUSTMENT HOLES
"D0" THRU "D8" FOR
"D" WAFER.

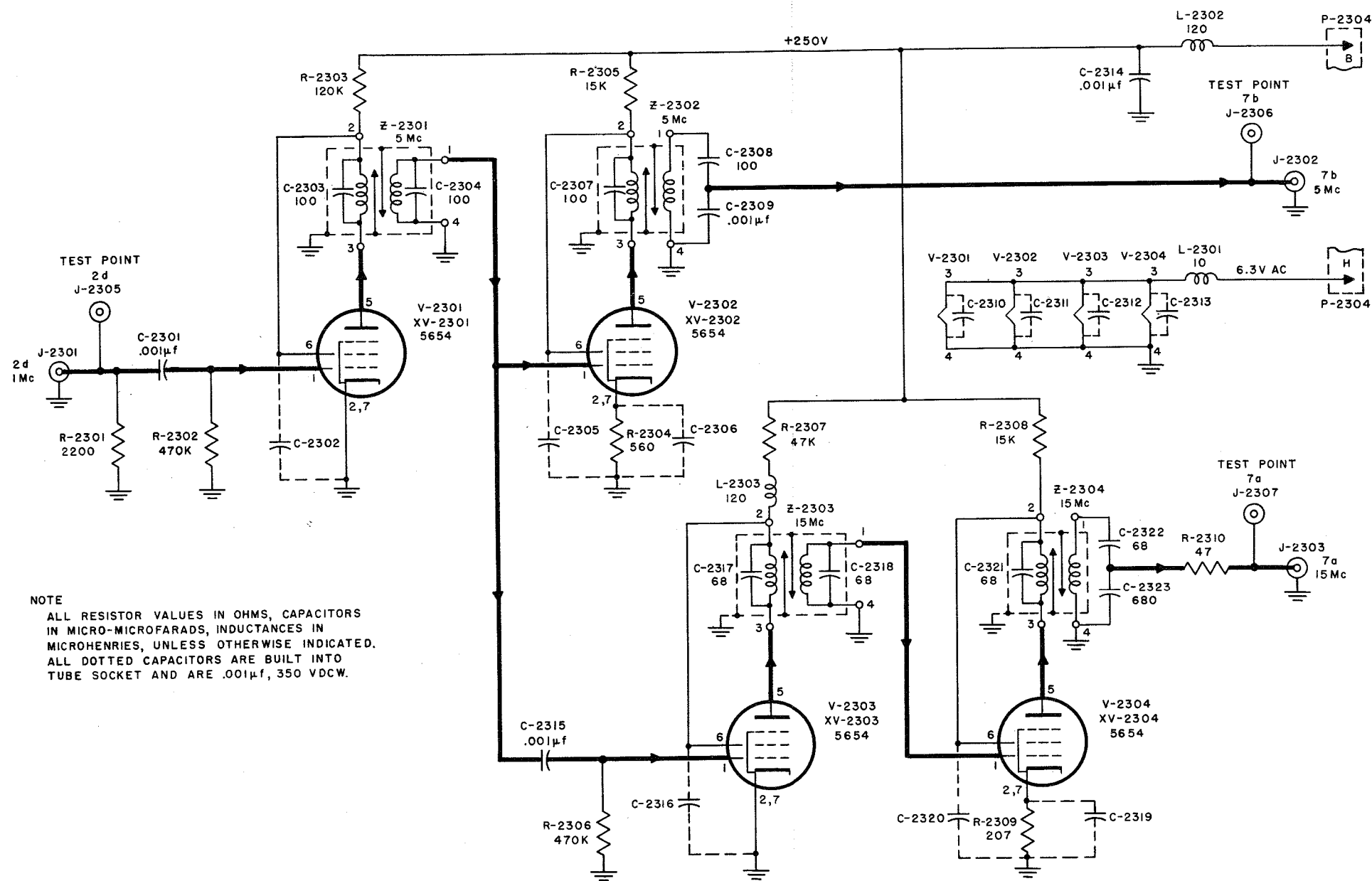
ADJUSTMENT "B" AND
"B0" THRU "B8" FOR
"B" WAFER

| WIRE NO. | DESCRIPTION |
|------------|--|
| 1 | NO. 20 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION. |
| 2 | NO. 22 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION. |
| ALL OTHERS | NO. 20 AWG SOLID COPPER, TINNED (BUS) WIRE. |

NOTE:
POINT TO POINT WIRING ON
S2201 WAFERS, IS NO. 22 AWG
SOLID COPPER TINNED BUS WIRE

FIG. 7- RFO, UNIT 6, WIRING DIAGRAM

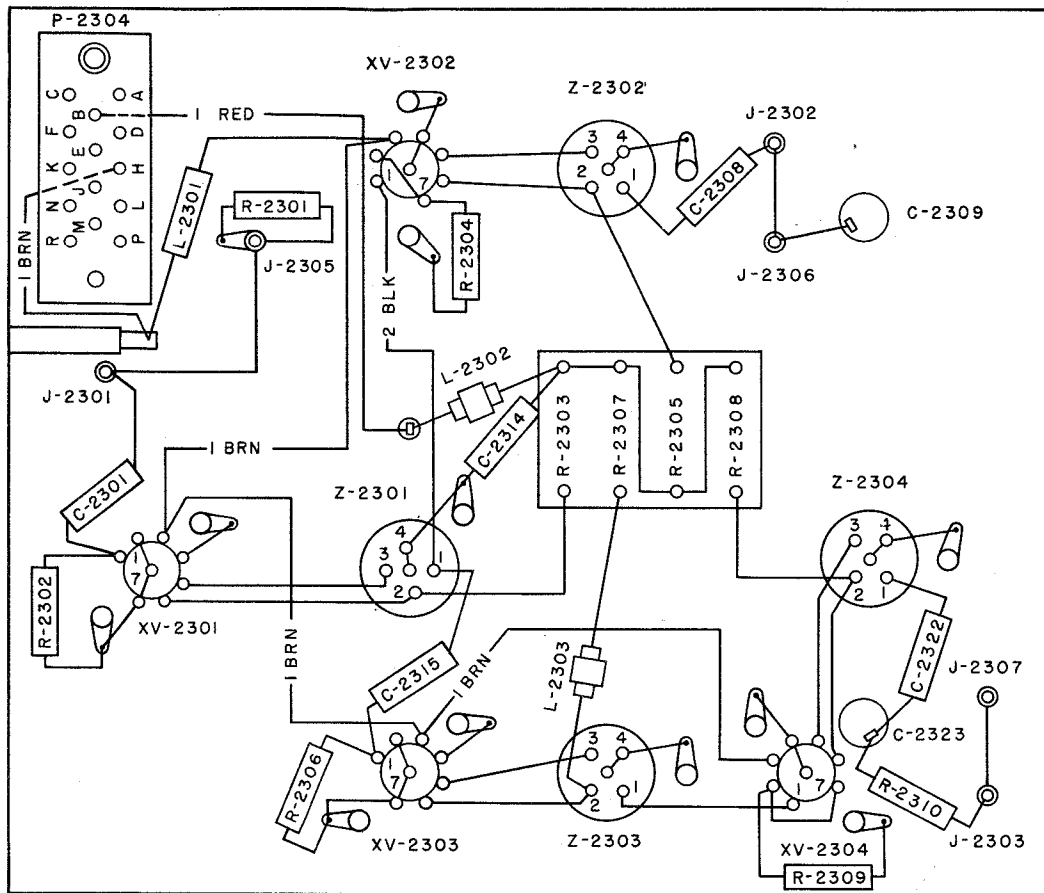
Figure 7-134. RFO, Unit 6 (Z-2204), Wiring Diagram



NOTE

ALL RESISTOR VALUES IN OHMS, CAPACITORS
IN MICRO-MICROFARADS, INDUCTANCES IN
MICROHENRIES, UNLESS OTHERWISE INDICATED.
ALL DOTTED CAPACITORS ARE BUILT INTO
TUBE SOCKET AND ARE .001 μ f, 350 VDCW.

Figure 7-135. RFO, Unit 7 (Z-2305), Schematic Diagram



| WIRE NO. | DESCRIPTION |
|------------|--|
| 1 | NO. 20 AWG STRANDED SINGLE CONDUCTOR 1000V INSULATION |
| 2 | NO. 20 AWG SOLID SINGLE CONDUCTOR 1000V INSULATION |
| ALL OTHERS | NO. 20 AWG SOLID COPPER TINNED (BUS) WIRE |

Figure 7-136. RFO, Unit 7 (Z-2305), Wiring Diagram

CORRECTIVE MAINTENANCE

NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A

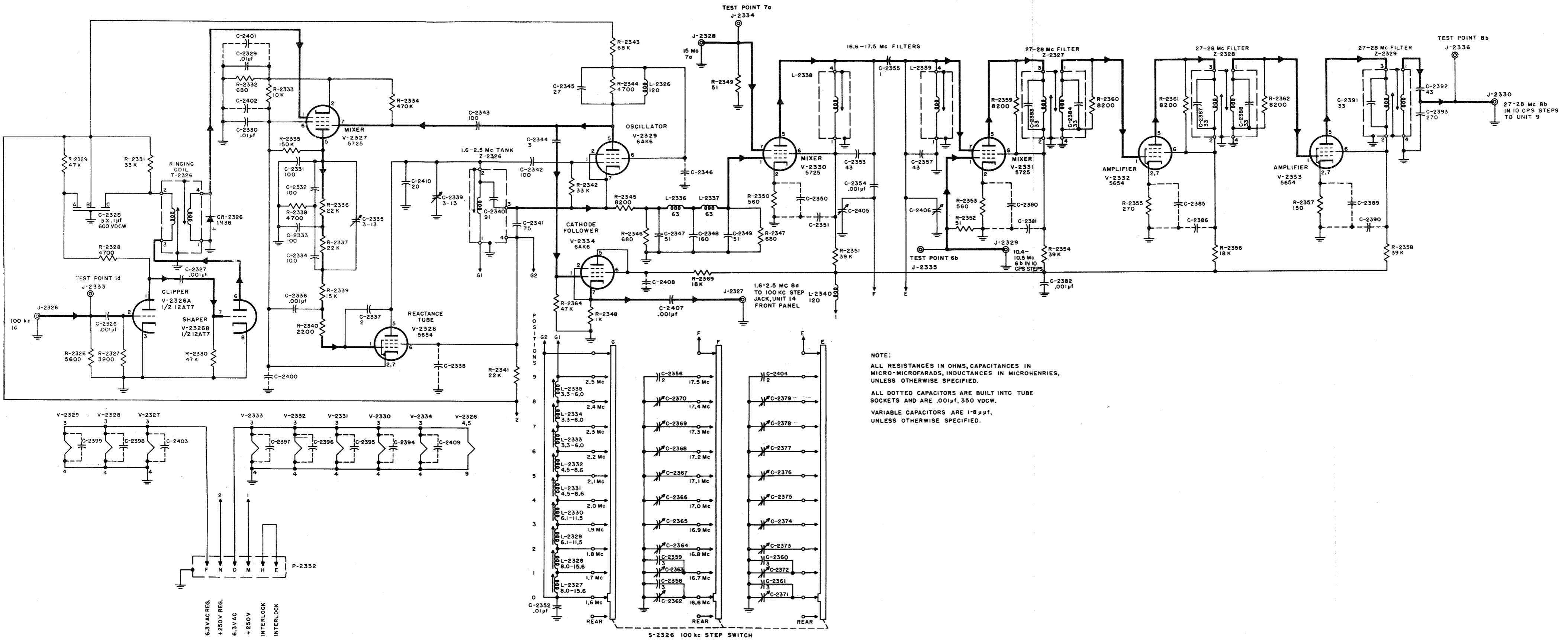


Figure 7-137. RFO, Unit 8 (Z-2330), Schematic Diagram

**CORRECTIVE
MAINTENANCE**

**NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A**

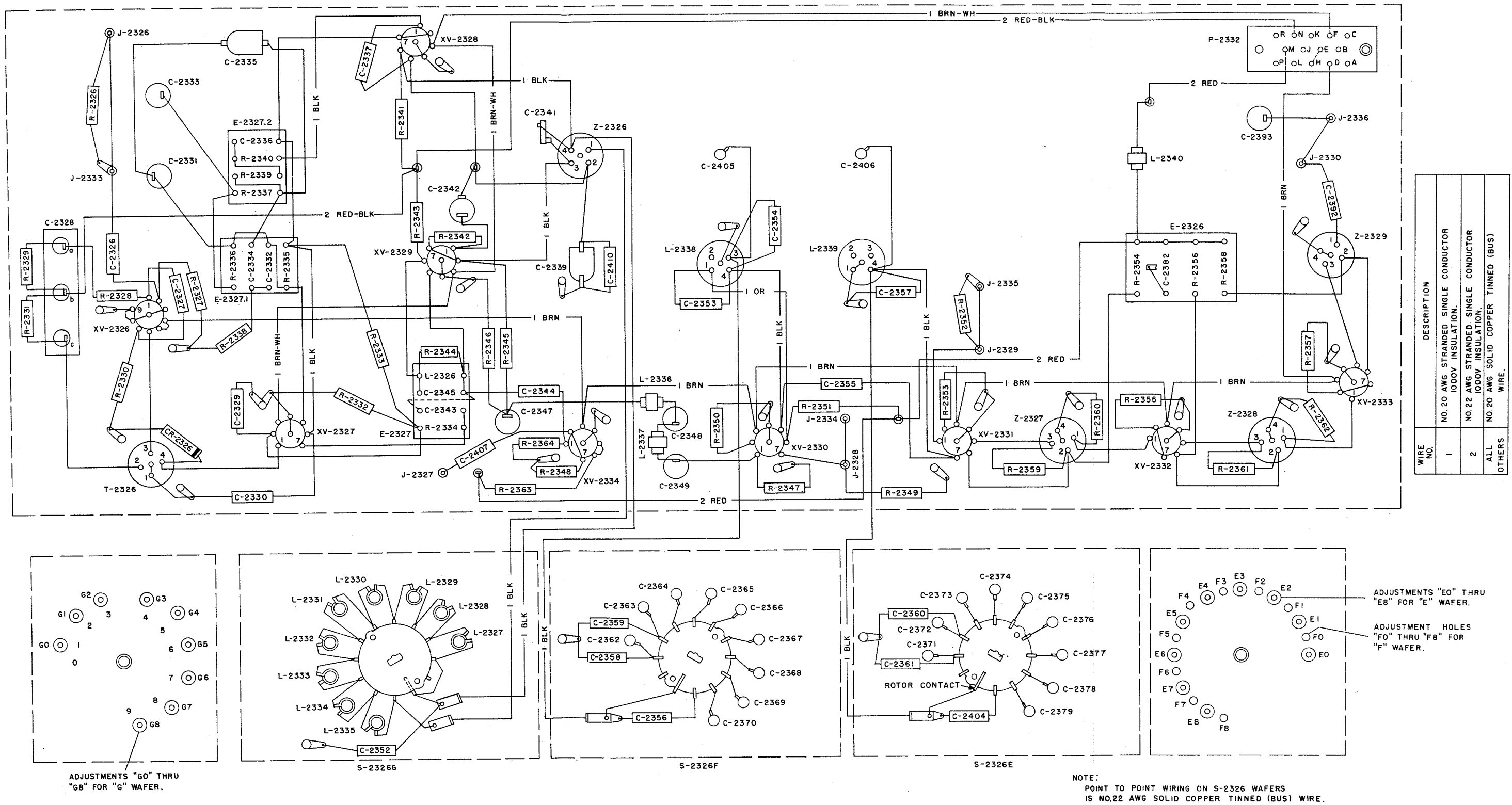
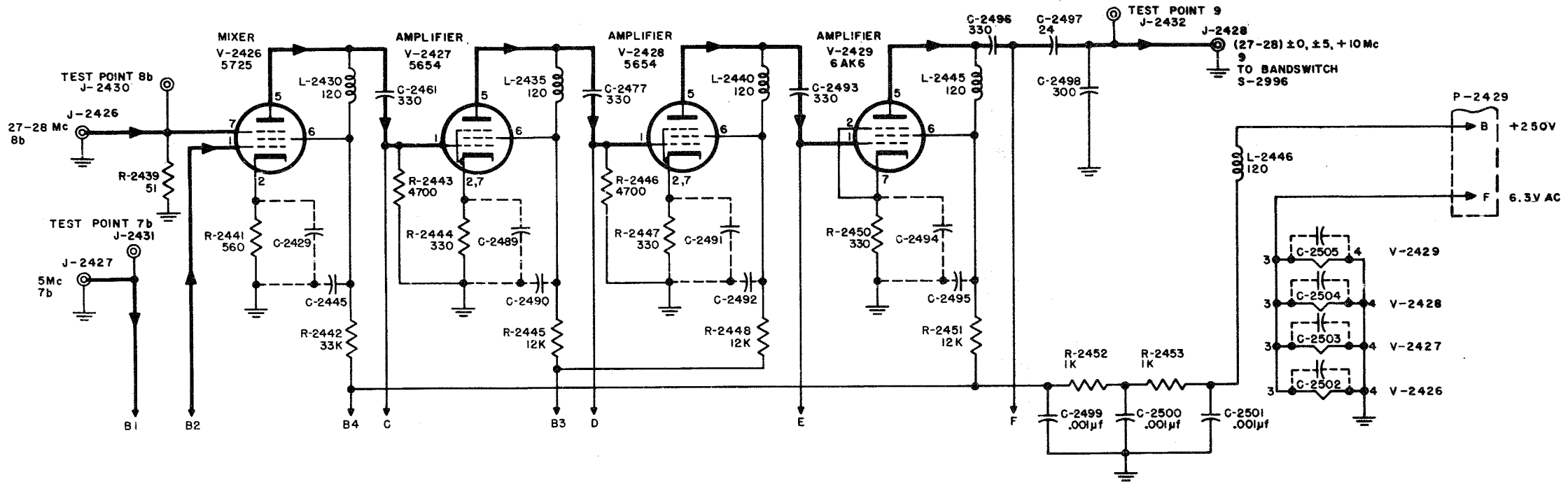
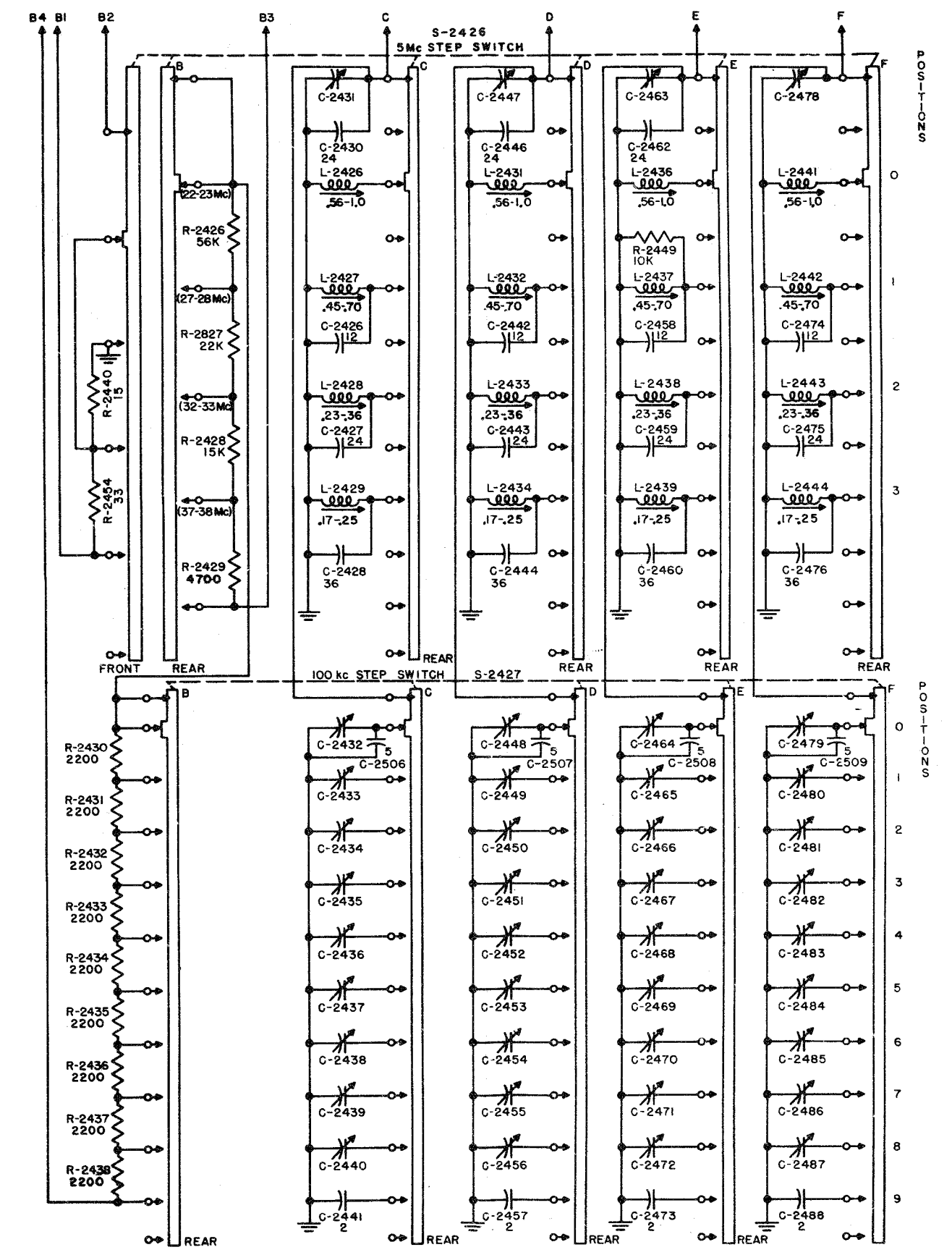


Figure 7-138. RFO, Unit 8 (Z-2330), Wiring Diagram



NOTE:
 ALL RESISTANCES IN OHMS, ALL CAPACITANCES IN MICRO-MICROFARADS, ALL INDUCTANCES IN MICROHENRIES UNLESS OTHERWISE SPECIFIED.
 ALL DOTTED CAPACITORS ARE BUILT INTO TUBE SOCKETS AND ARE .001μf, 350 VDCW.
 VARIABLE CAPACITORS ARE IN 1-7μf UNLESS OTHERWISE SPECIFIED.

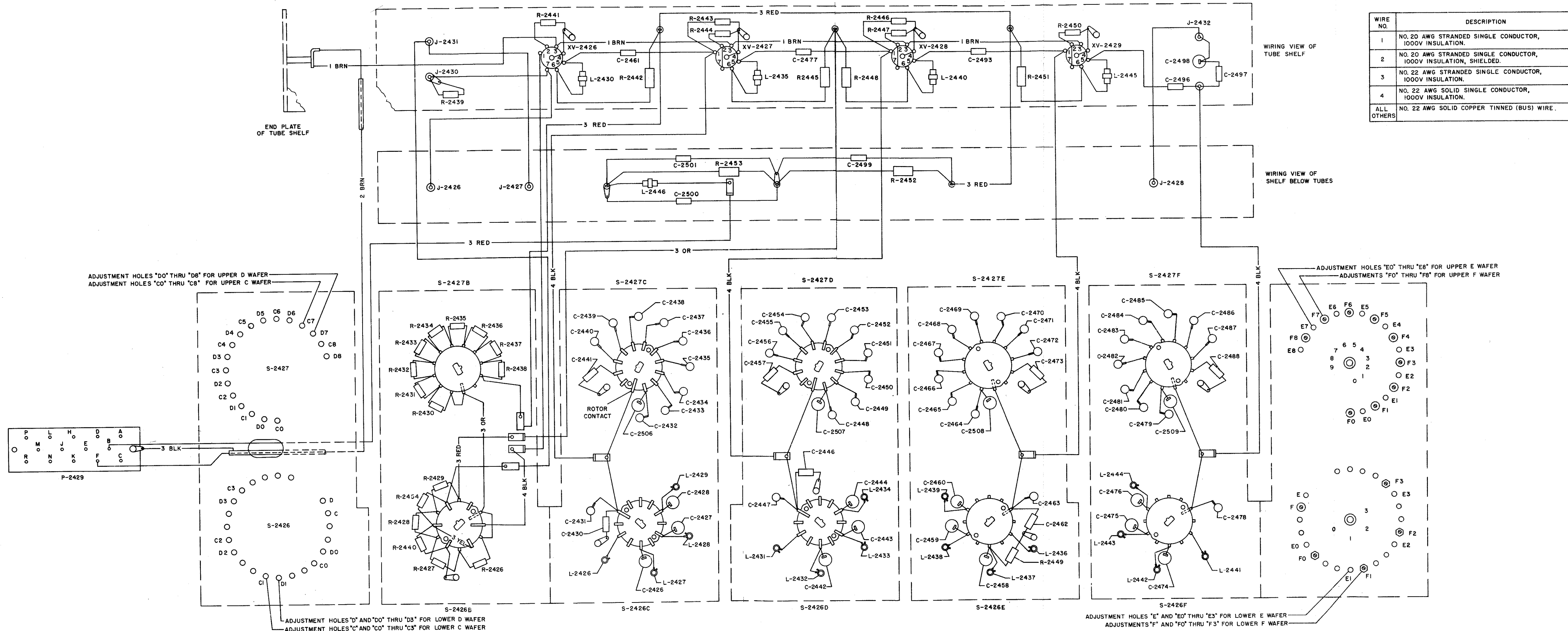


ORIGINAL

7-211/7-212

Figure 7-139. RFO, Unit 9 (Z-2426), Schematic Diagram

CORRECTIVE
MAINTENANCE



| WIRE NO. | DESCRIPTION |
|------------|---|
| 1 | NO. 20 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION. |
| 2 | NO. 20 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION, SHIELDED. |
| 3 | NO. 22 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION. |
| 4 | NO. 22 AWG SOLID SINGLE CONDUCTOR, 1000V INSULATION. |
| ALL OTHERS | NO. 22 AWG SOLID COPPER TINNED (BUS) WIRE. |

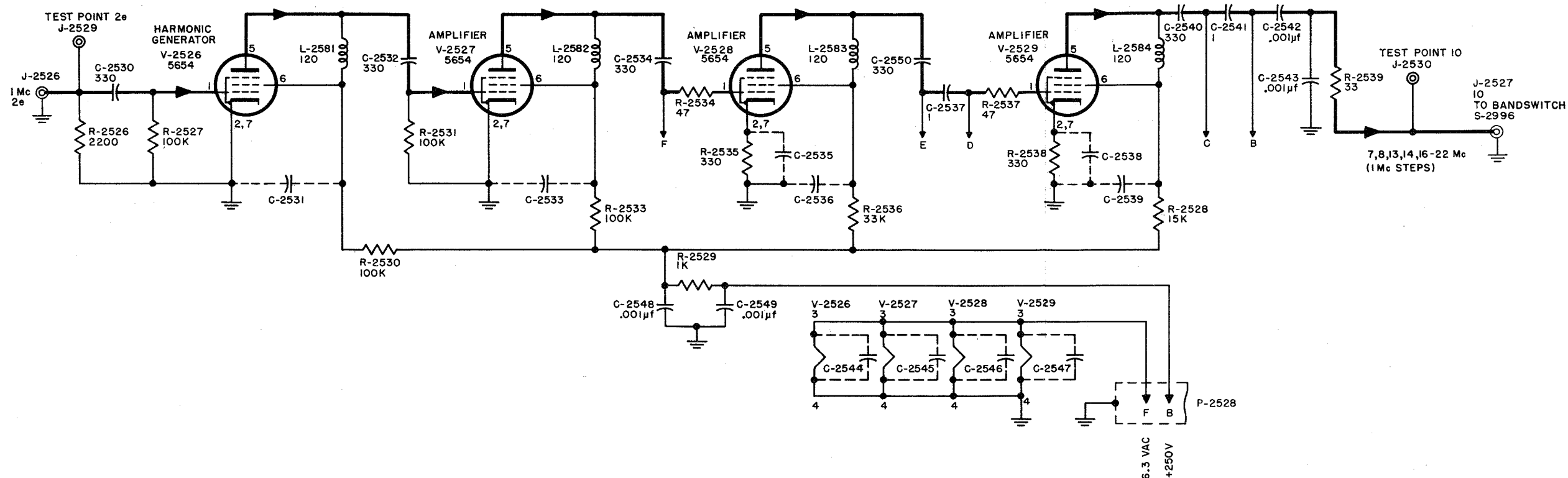
ORIGINAL

7-213/7-214

Figure 7-140. RFO, Unit 9 (Z-2426), Wiring Diagram

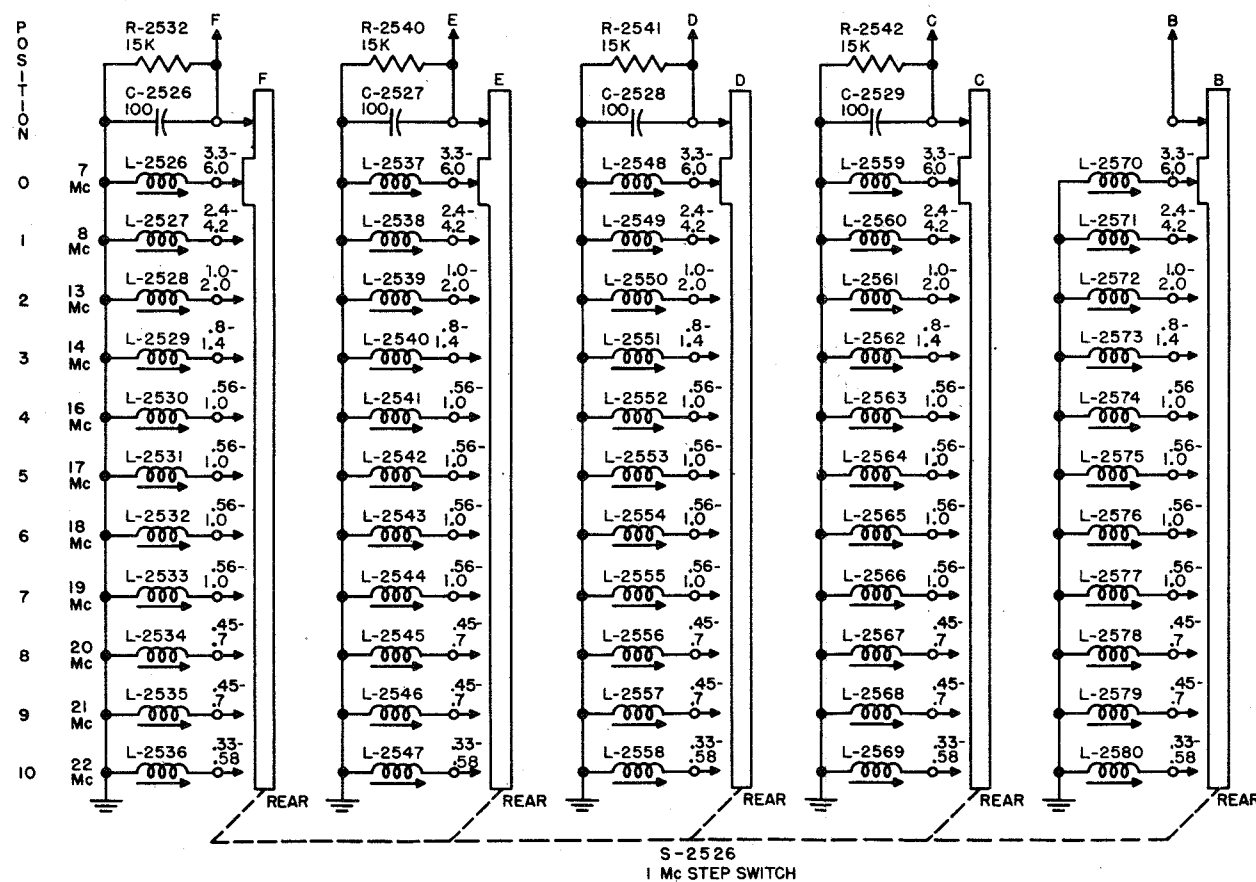
CORRECTIVE MAINTENANCE

NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A



NOTE:

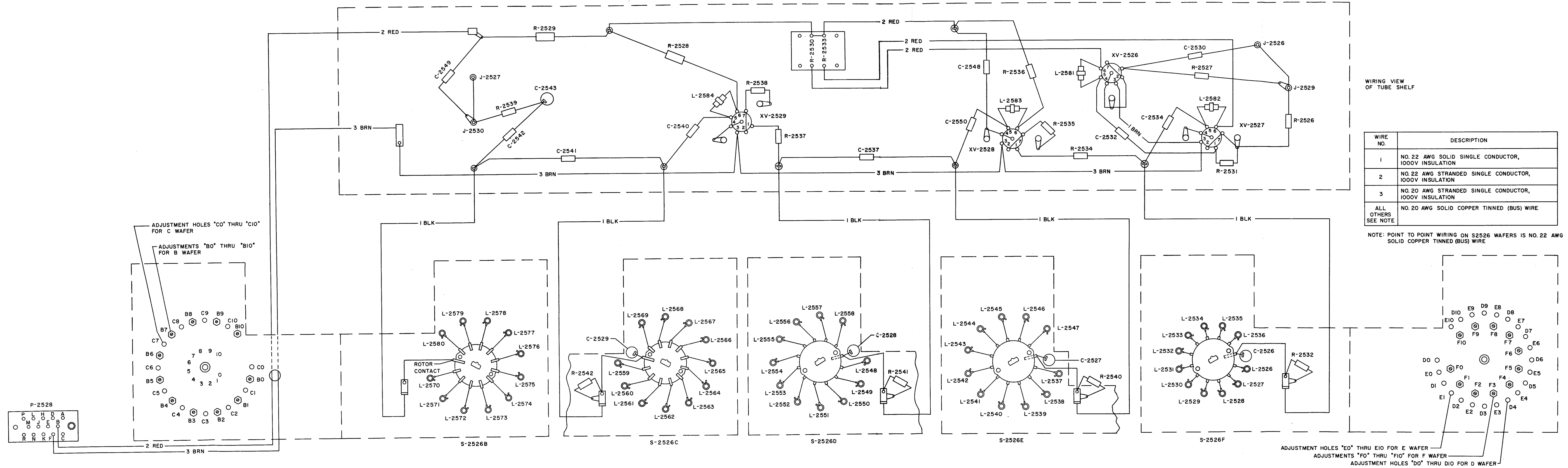
ALL RESISTANCES IN OHMS, CAPACITANCES IN MICRO-MICROFARADS, INDUCTANCES IN MICROHENRIES, UNLESS OTHERWISE SPECIFIED.
ALL DOTTED CAPACITORS ARE BUILT INTO TUBE SOCKET AND ARE .001 μf, 350 VDCW.



ORIGINAL

7-215/7-216

Figure 7-141. RFO, Unit 10 (Z-2526), Schematic Diagram



WIRING VIEW OF TUBE SHELF

Figure 7-142. RFO, Unit 10 (Z-2526), Wiring Diagram

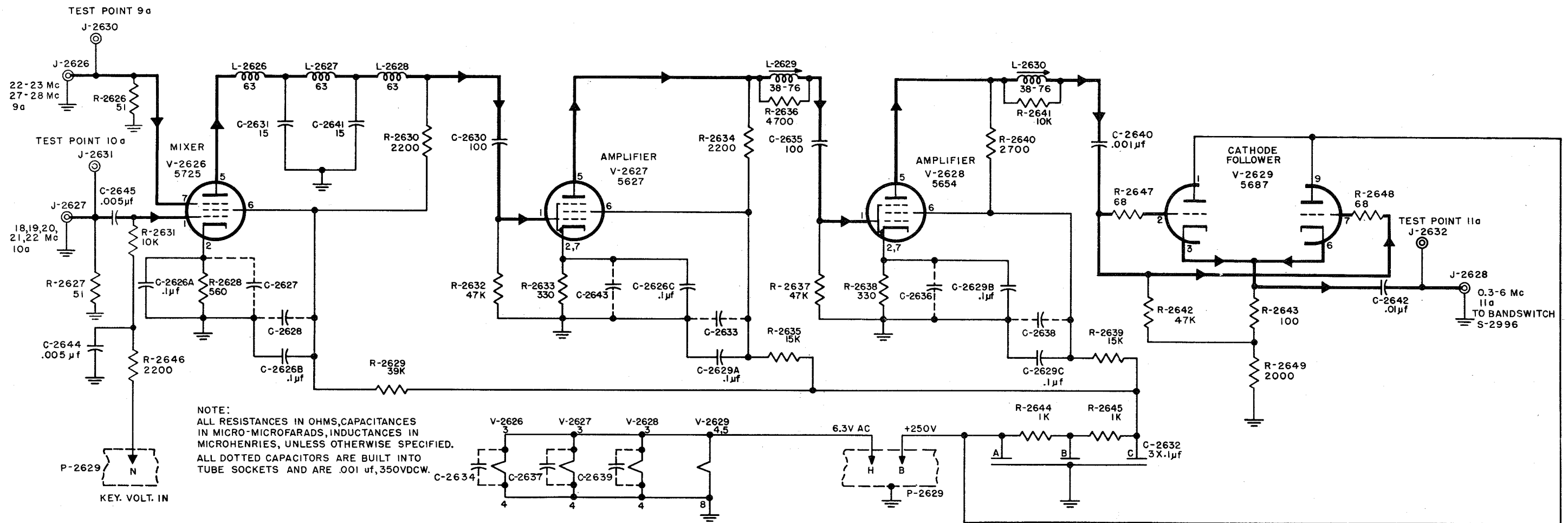


Figure 7-143. RFO, Unit 11A (Z-2626), Schematic Diagram

| WIRE NO | DESCRIPTION |
|------------|---|
| 1 | NO. 18 AWG STRANDED SINGLE CONDUCTOR, 1000 V. INSULATION. |
| 2 | NO. 20 AWG STRANDED SINGLE CONDUCTOR, 1000 V. INSULATION. |
| 3 | NO. 22 AWG STRANDED SINGLE CONDUCTOR, 1000 V. INSULATION. |
| ALL OTHERS | NO. 20 AWG SOLID COPPER, TINNED (BUS) WIRE. |

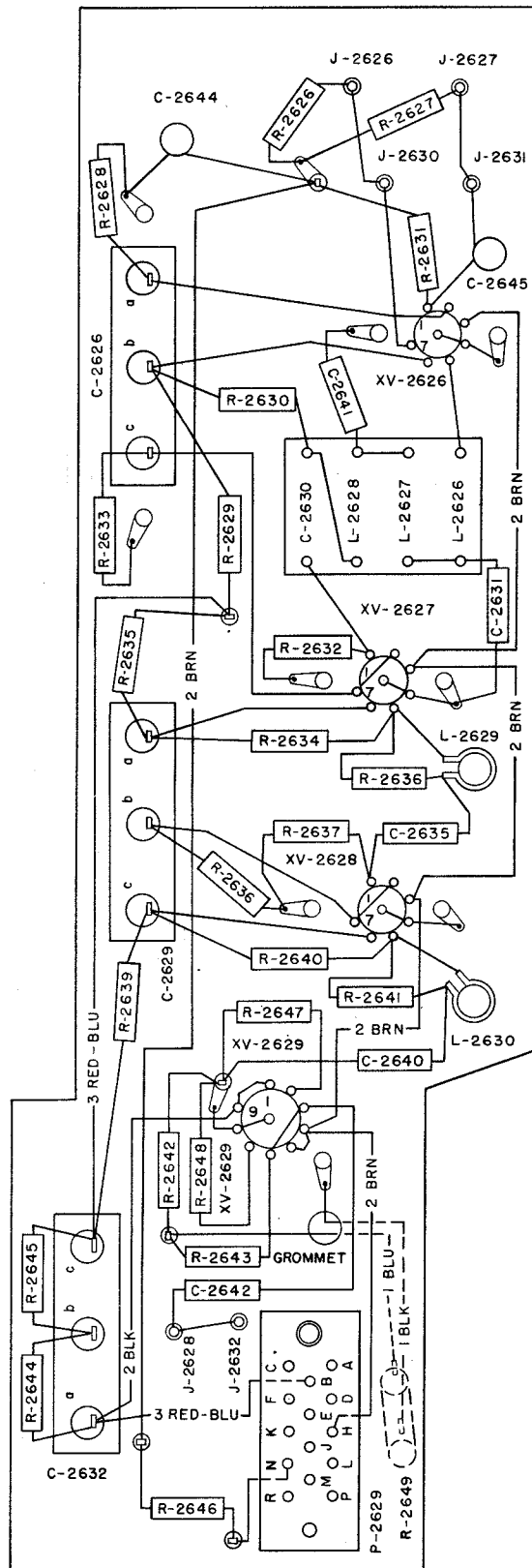
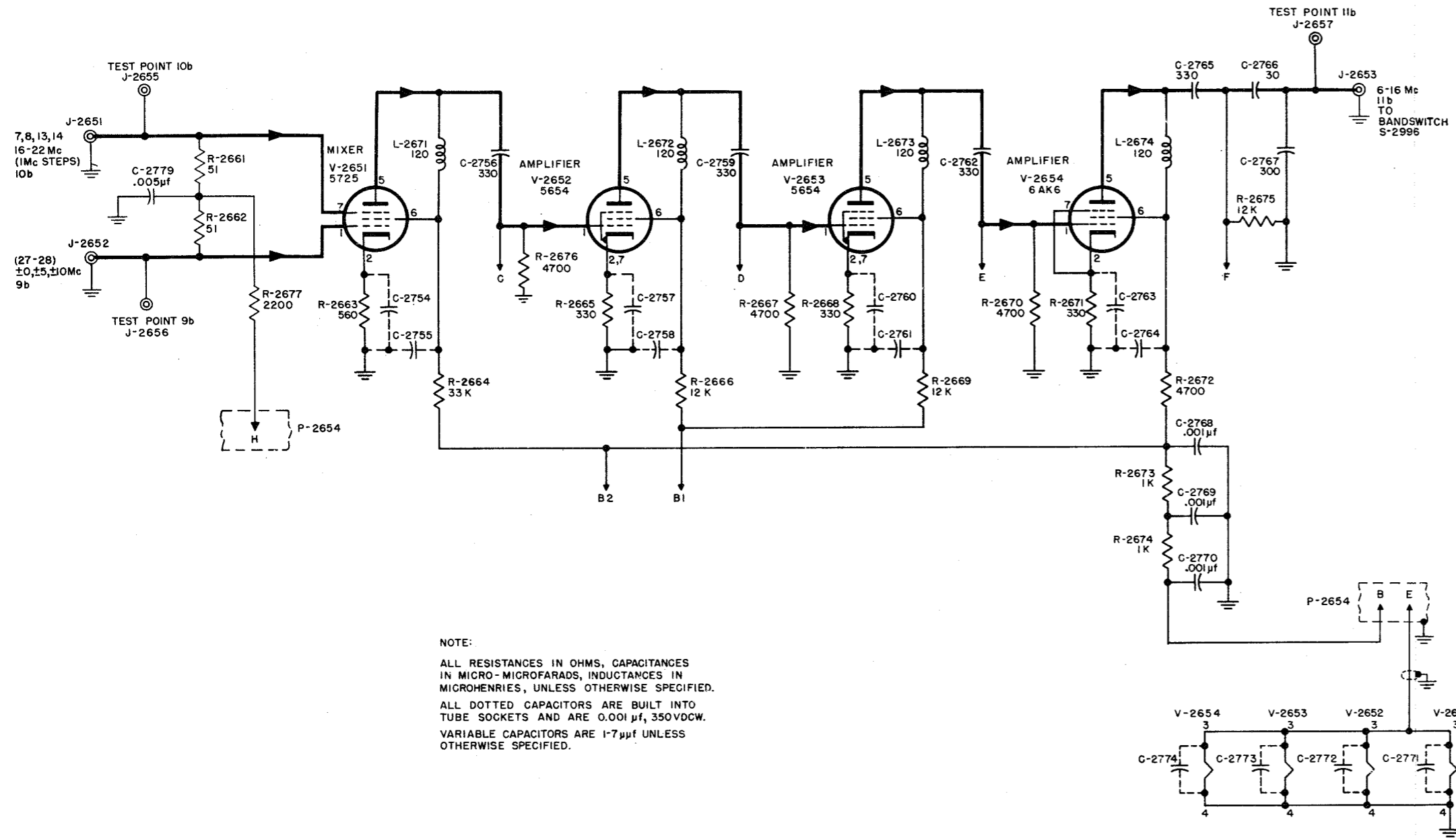
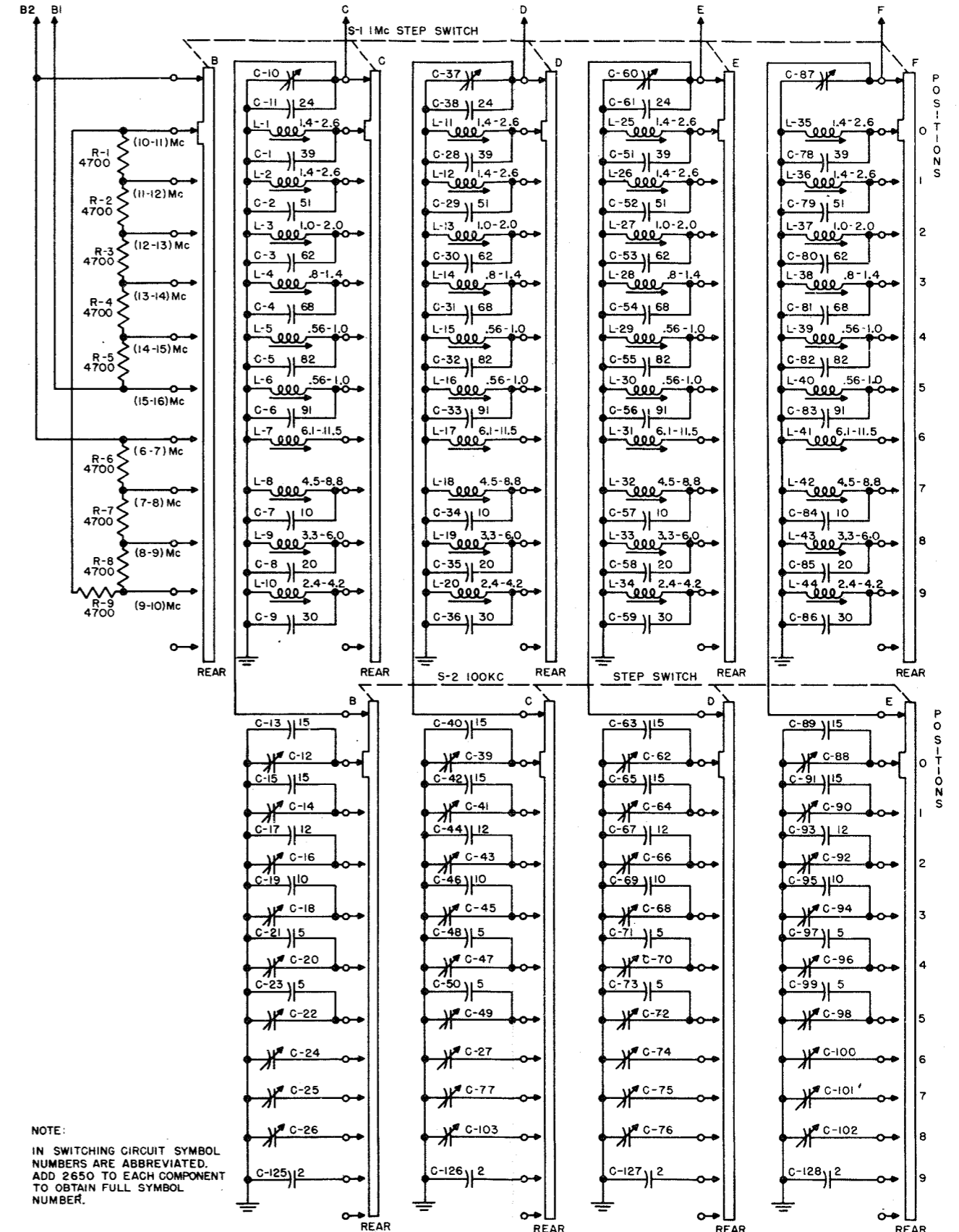


Figure 7-144. RFO, Unit 11A (Z-2626), Wiring Diagram



NOTE:
ALL RESISTANCES IN OHMS, CAPACITANCES
IN MICRO-MICROFARADS, INDUCTANCES IN
MICROHENRIES, UNLESS OTHERWISE SPECIFIED.
ALL DOTTED CAPACITORS ARE BUILT INTO
TUBE SOCKETS AND ARE 0.001 μ f, 350VDCW.
VARIABLE CAPACITORS ARE 1-7 μ f UNLESS
OTHERWISE SPECIFIED.



NOTE:
IN SWITCHING CIRCUIT SYMBOL
NUMBERS ARE ABBREVIATED.
ADD 2650 TO EACH COMPONENT
TO OBTAIN FULL SYMBOL
NUMBER.

Figure 7-145. RFO, Unit 11B (Z-2651), Schematic Diagram

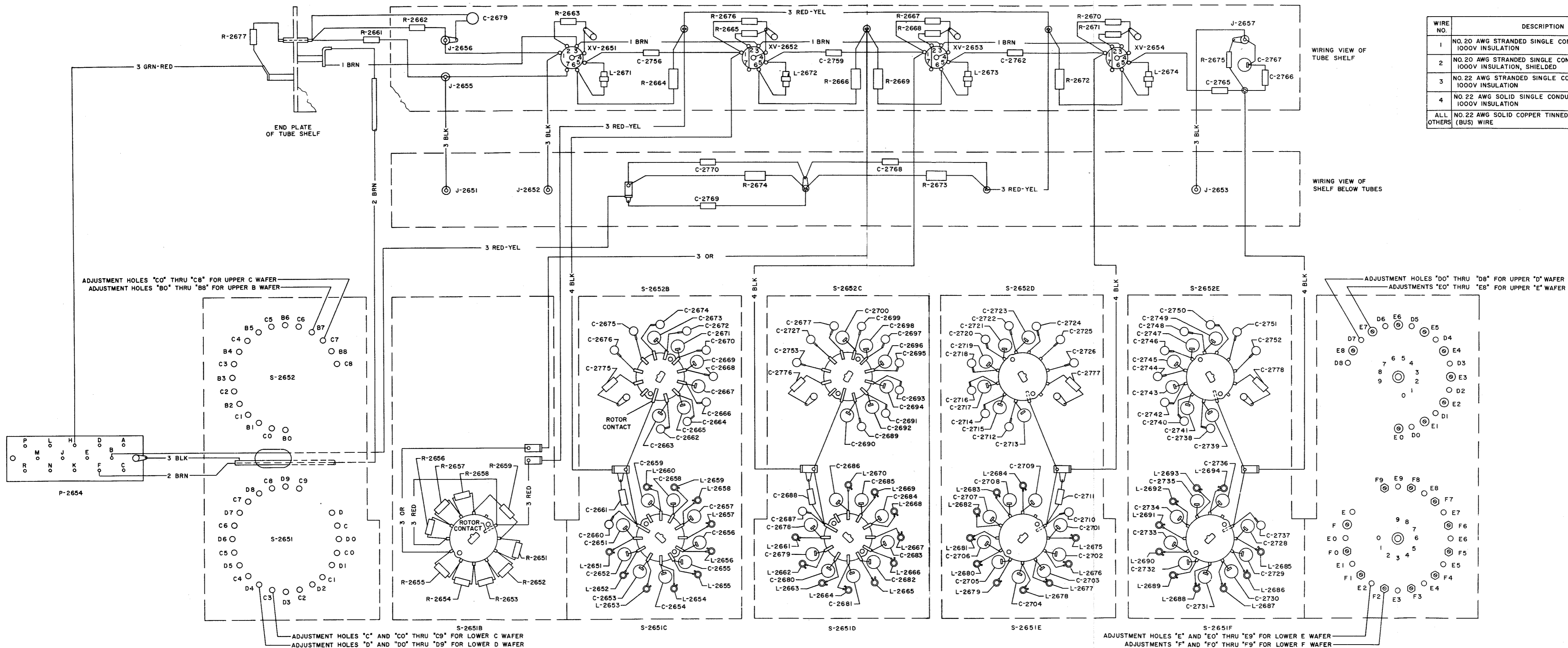


Figure 7-146. RFO, Unit 11B (Z-2651), Wiring Diagram

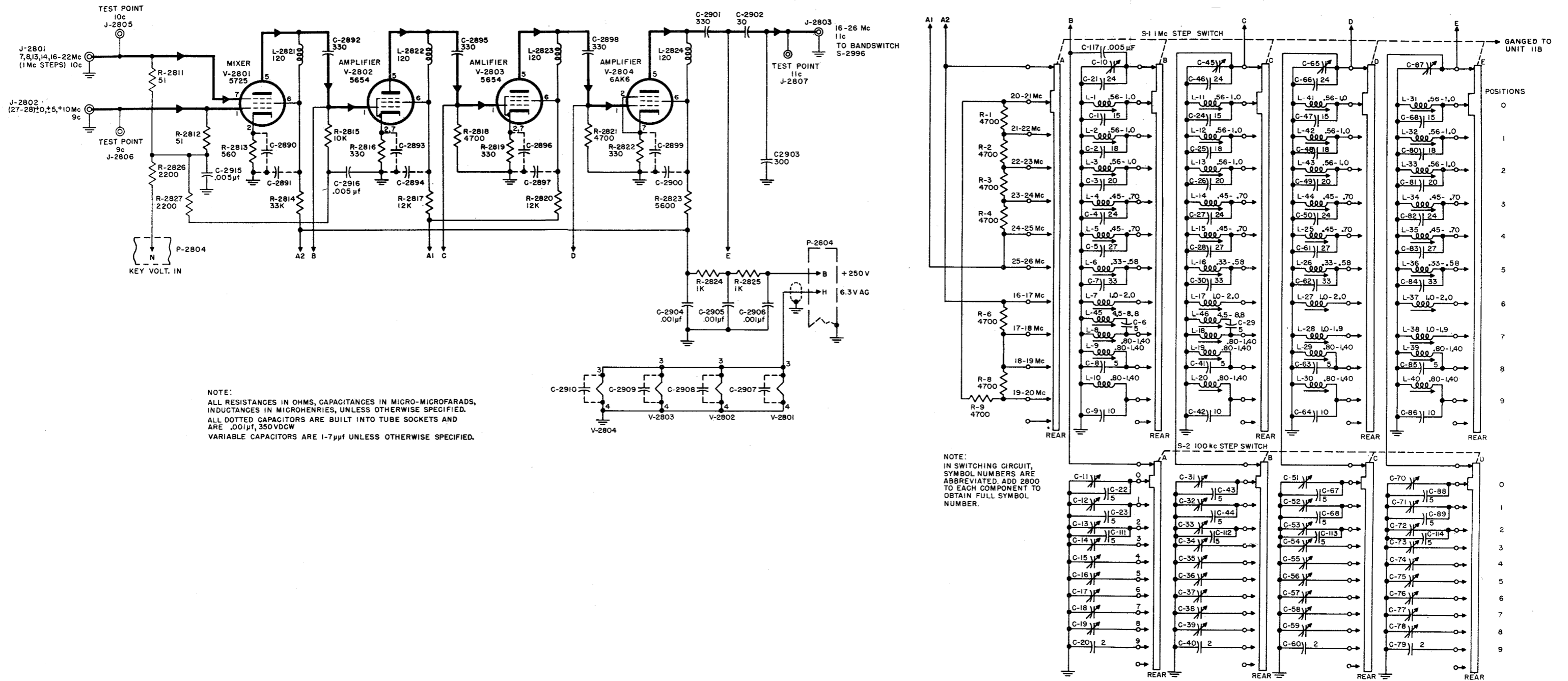
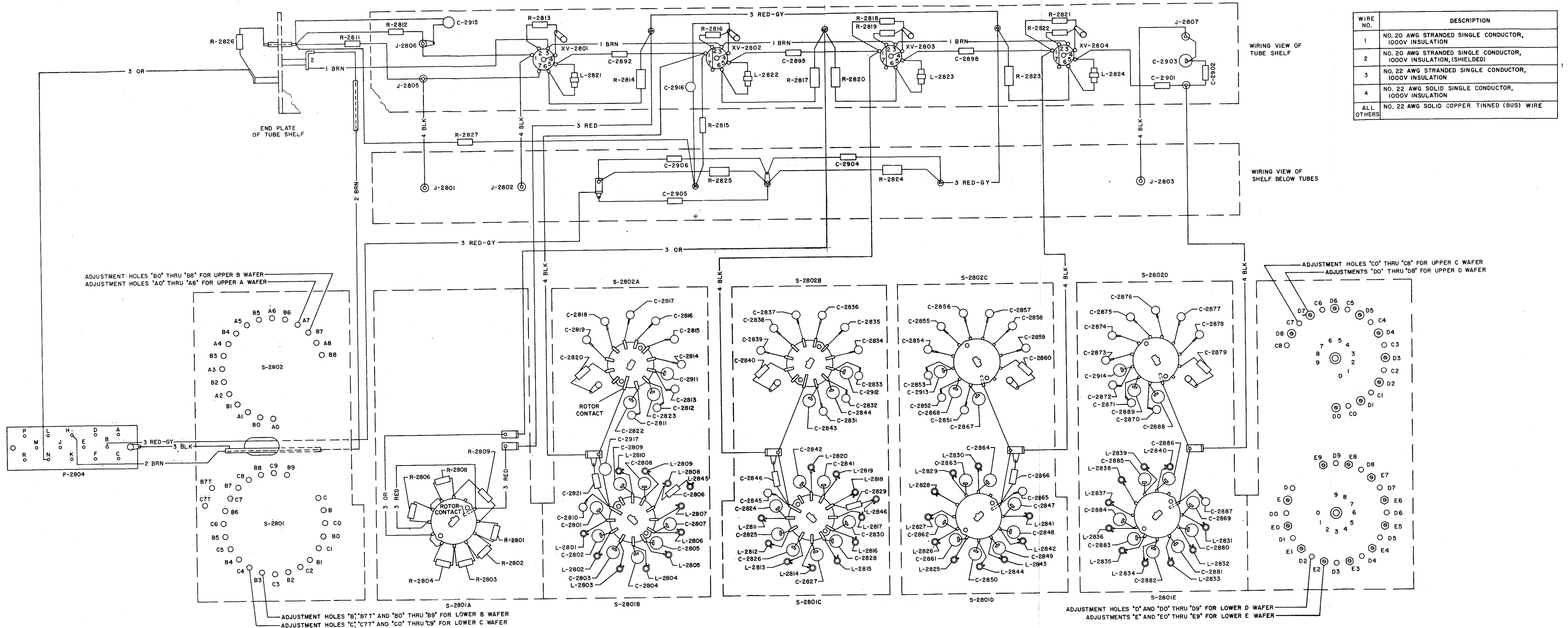


Figure 7-147. RFO, Unit 11C (Z-2801), Schematic Diagram



| WIRE NO. | DESCRIPTION |
|------------|--|
| 1 | NO. 20 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION |
| 2 | NO. 20 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION, (SHIELDED) |
| 3 | NO. 22 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION |
| 4 | NO. 22 AWG SOLID SINGLE CONDUCTOR, 1000V INSULATION |
| ALL OTHERS | NO. 22 AWG SOLID COPPER TINNED (BUS) WIRE |

Figure 7-148. RFO, Unit 11C (Z-2801), Wiring Diagram

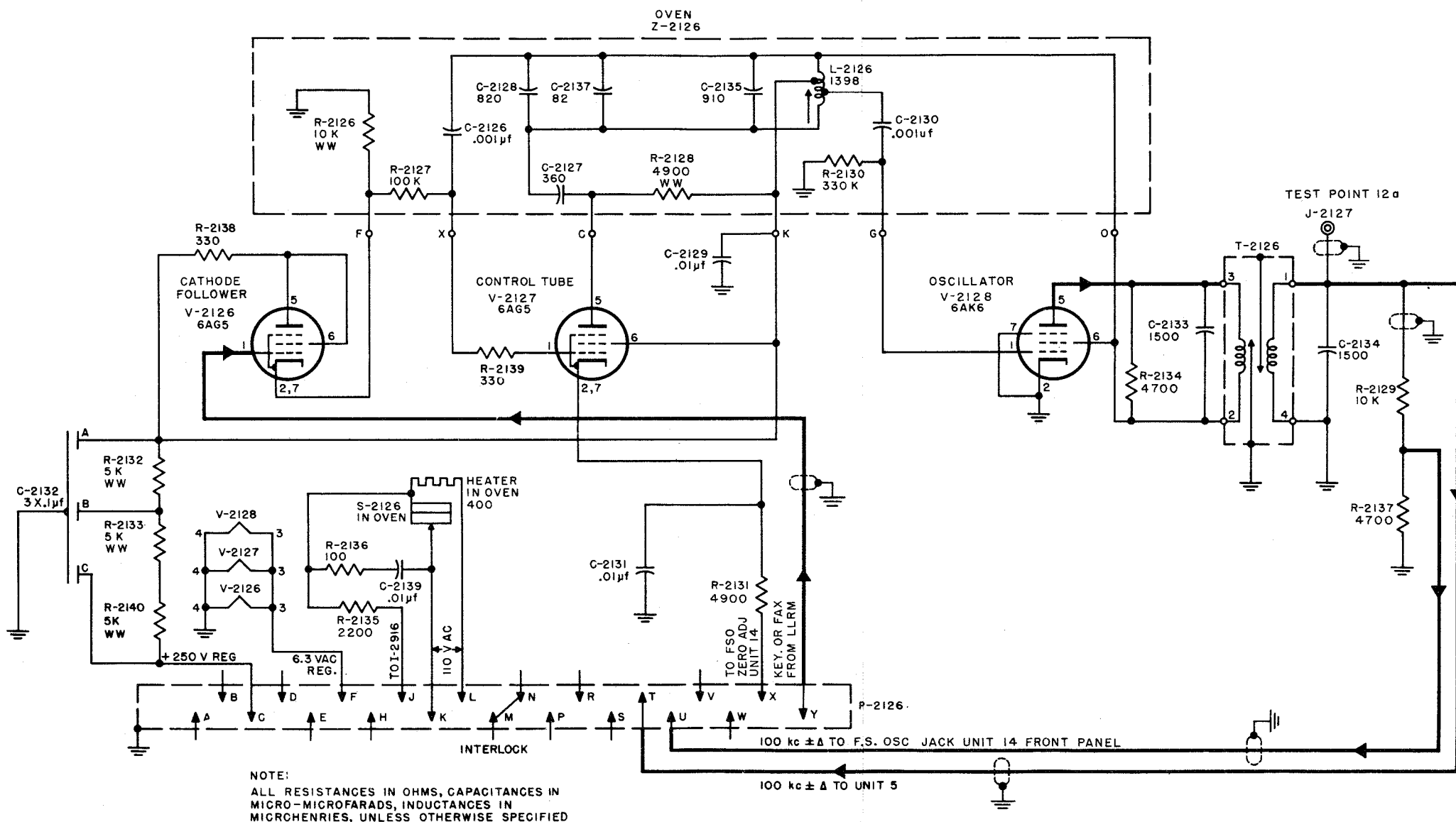


Figure 7-149. RFO, Unit 12 (Z-2127), Schematic Diagram

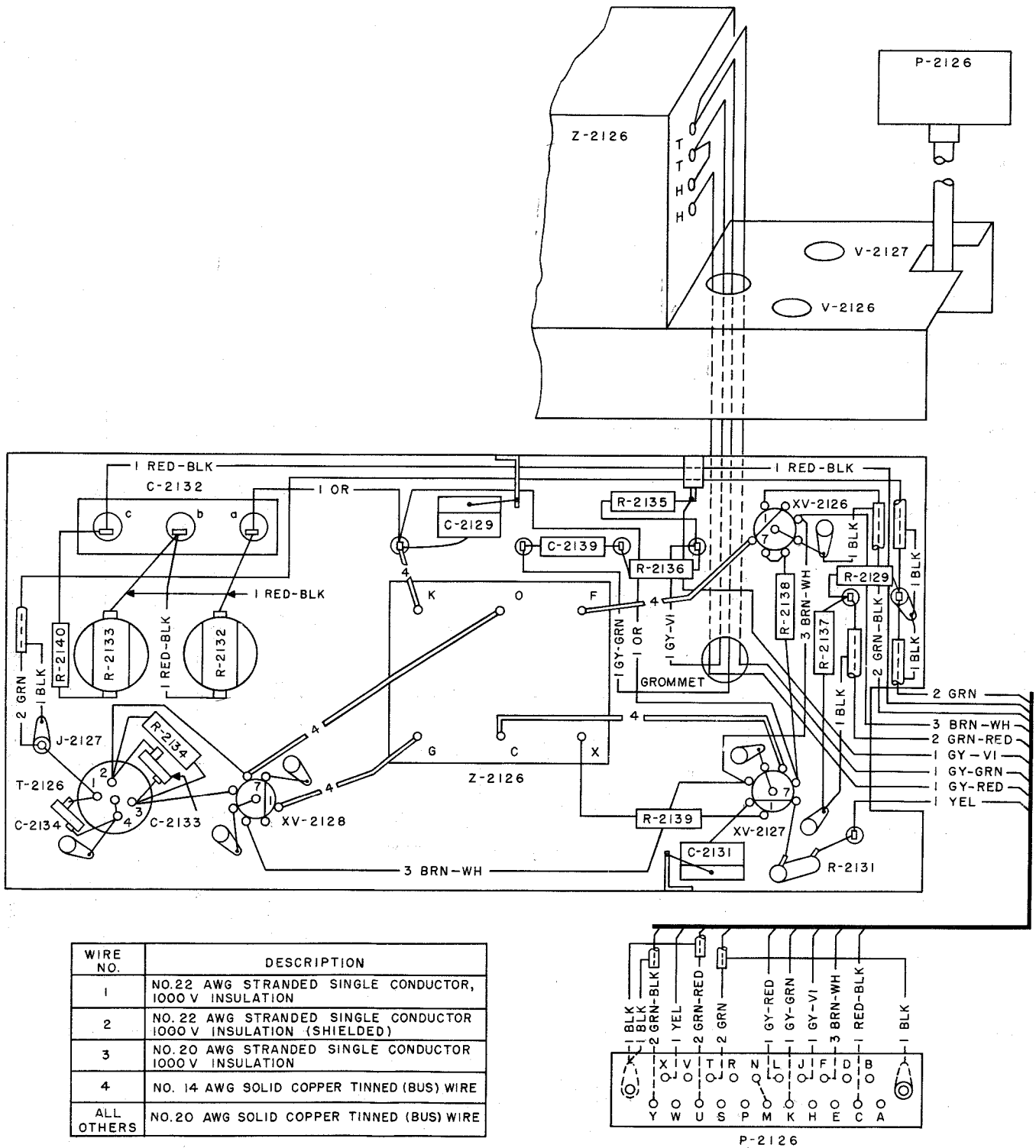


Figure 7-150. RFO, Unit 12 (Z-2127), Wiring Diagram

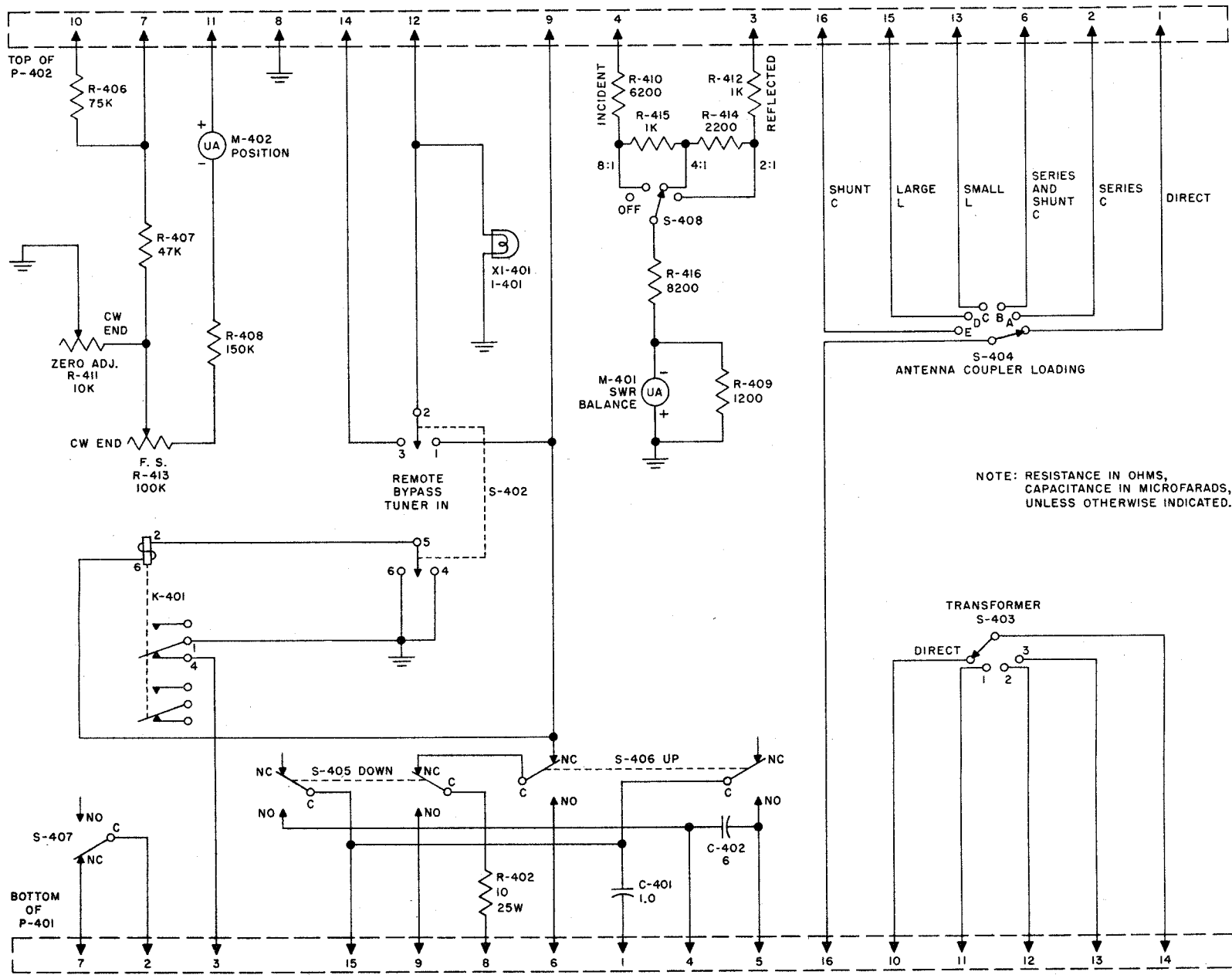


Figure 7-151. Control-Indicator C-1352/SRT, Schematic Diagram

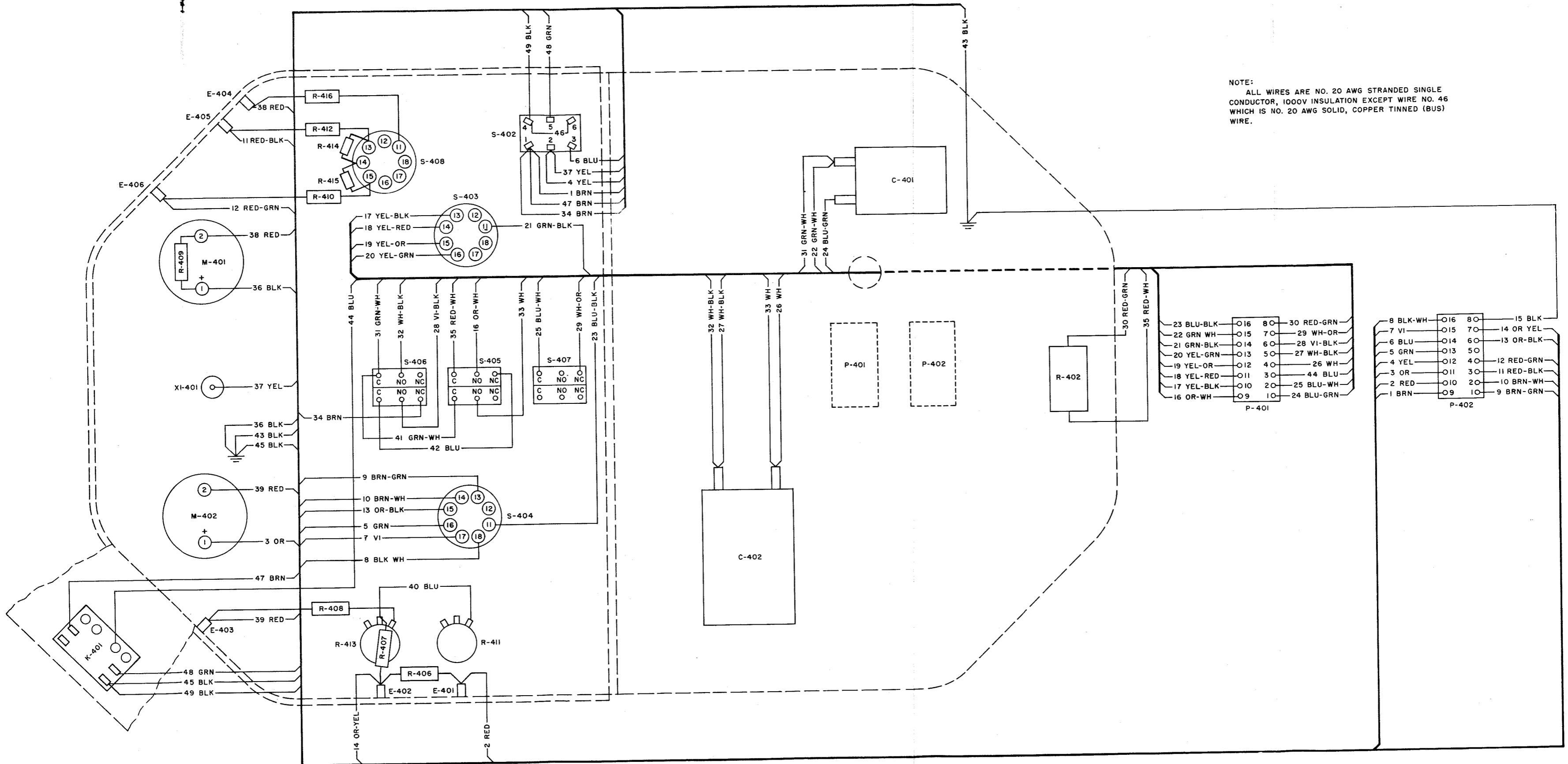


Figure 7-152. Control-Indicator C-1352/SRT, Wiring Diagram

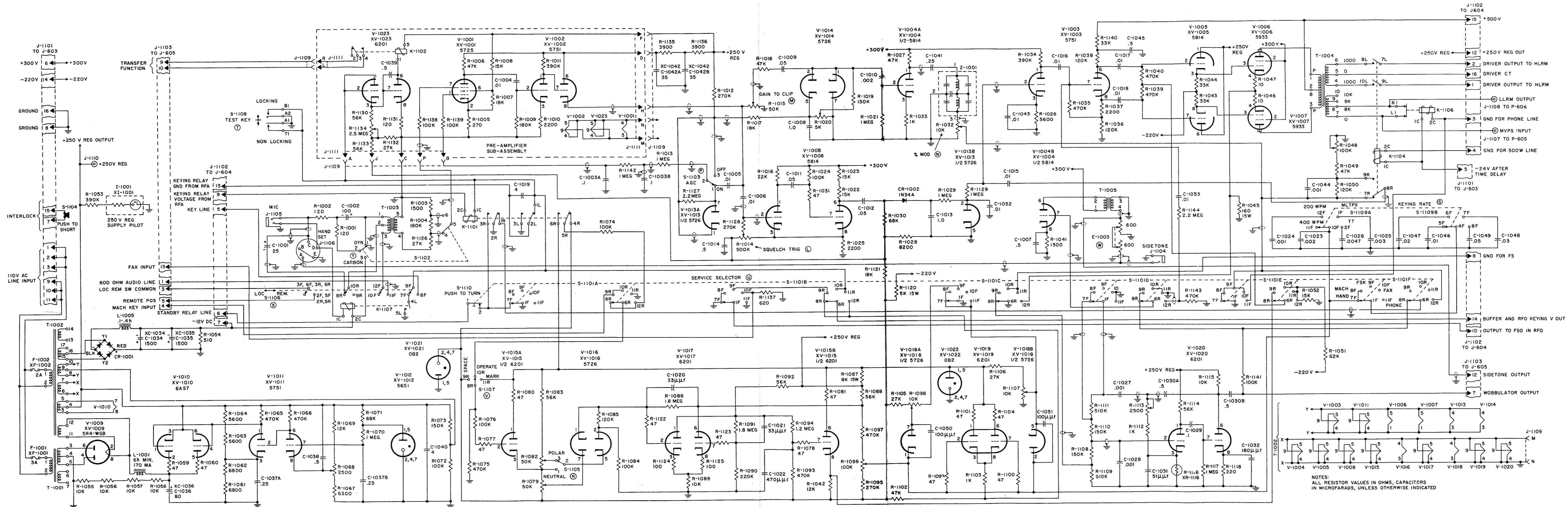


Figure 7-153. Radio Modulator MD-229/SRT (LRM), Schematic Diagram

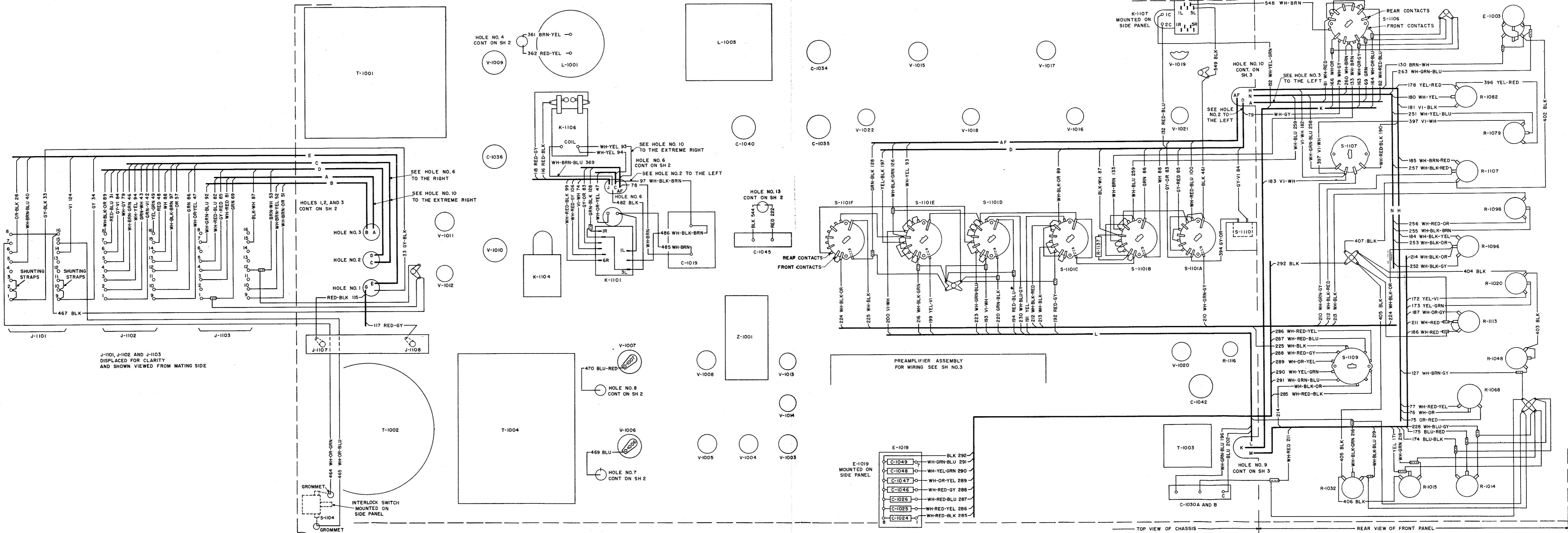


Figure 7-154. Radio Modulator MD-229/SRT (LLRM), Wiring Diagram (Sheet 1 of 3)

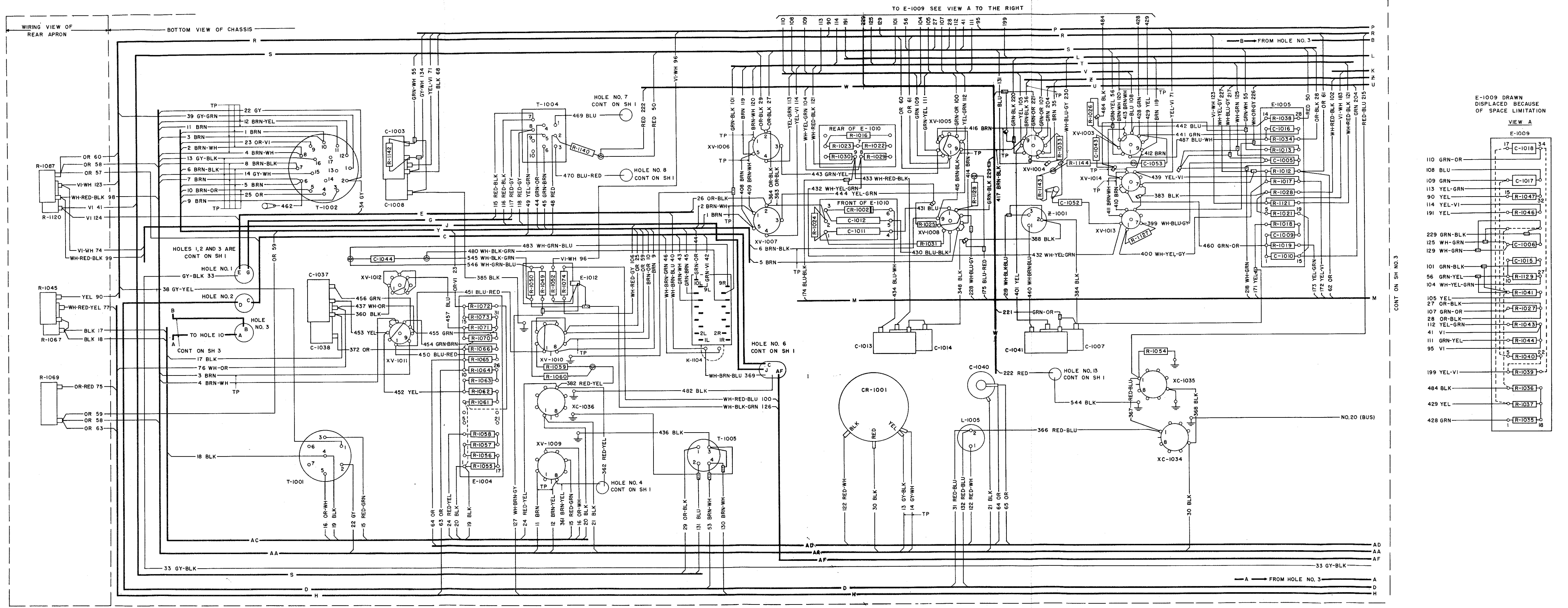
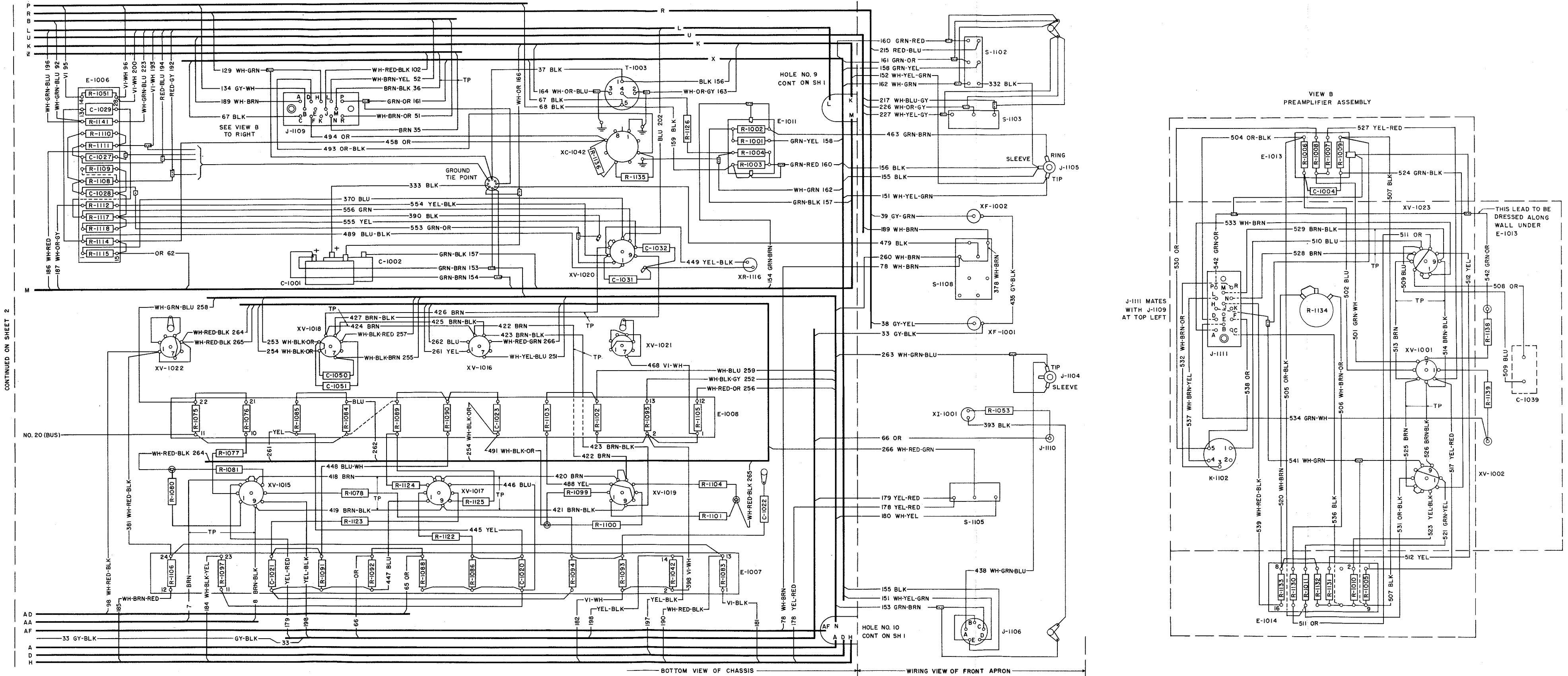


Figure 7-154. Radio Modulator MD-229/SRT (LRM), Wiring Diagram (Sheet 2 of 3)



CONTINUED ON SHEET 2

ORIGINAL

Figure 7-154. Radio Modulator MD-229/SRT (LLRM), Wiring Diagram (Sheet 3 of 3)

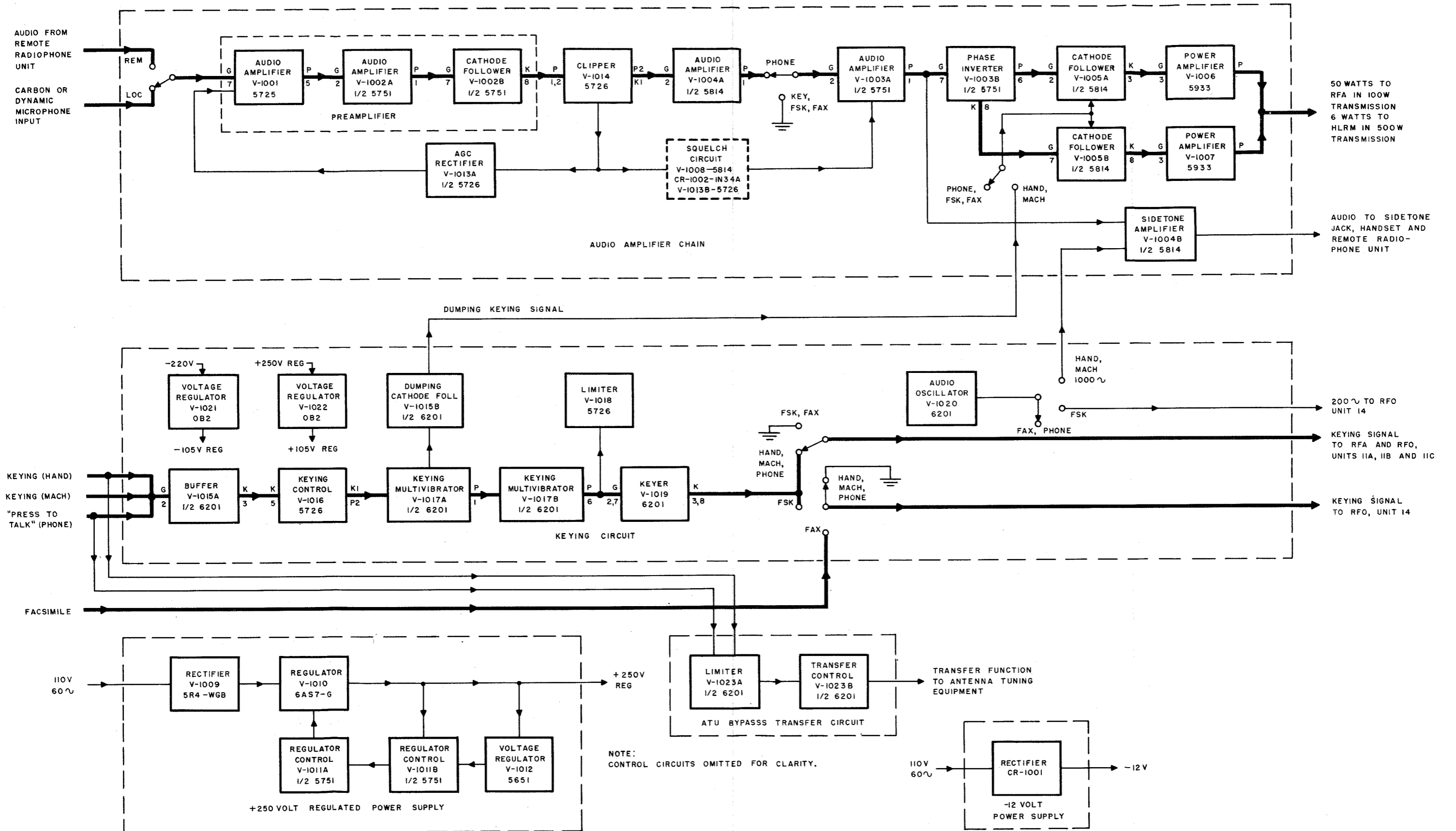


Figure 7-155. Radio Modulator MD-229/SRT (LLRM), Servicing Block Diagram

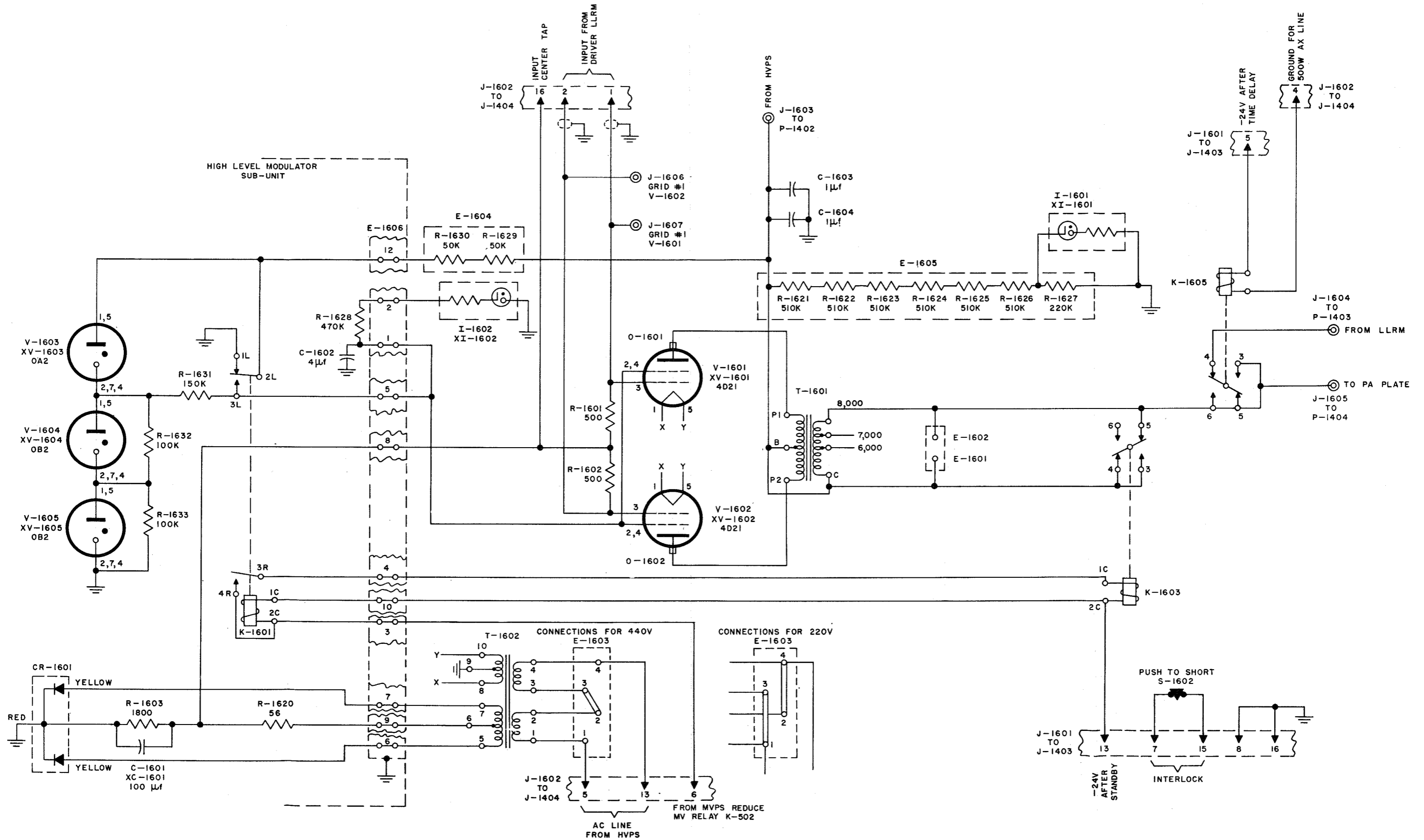


Figure 7-156. Radio Modulator MD-230/SRT (HLRM), Schematic Diagram

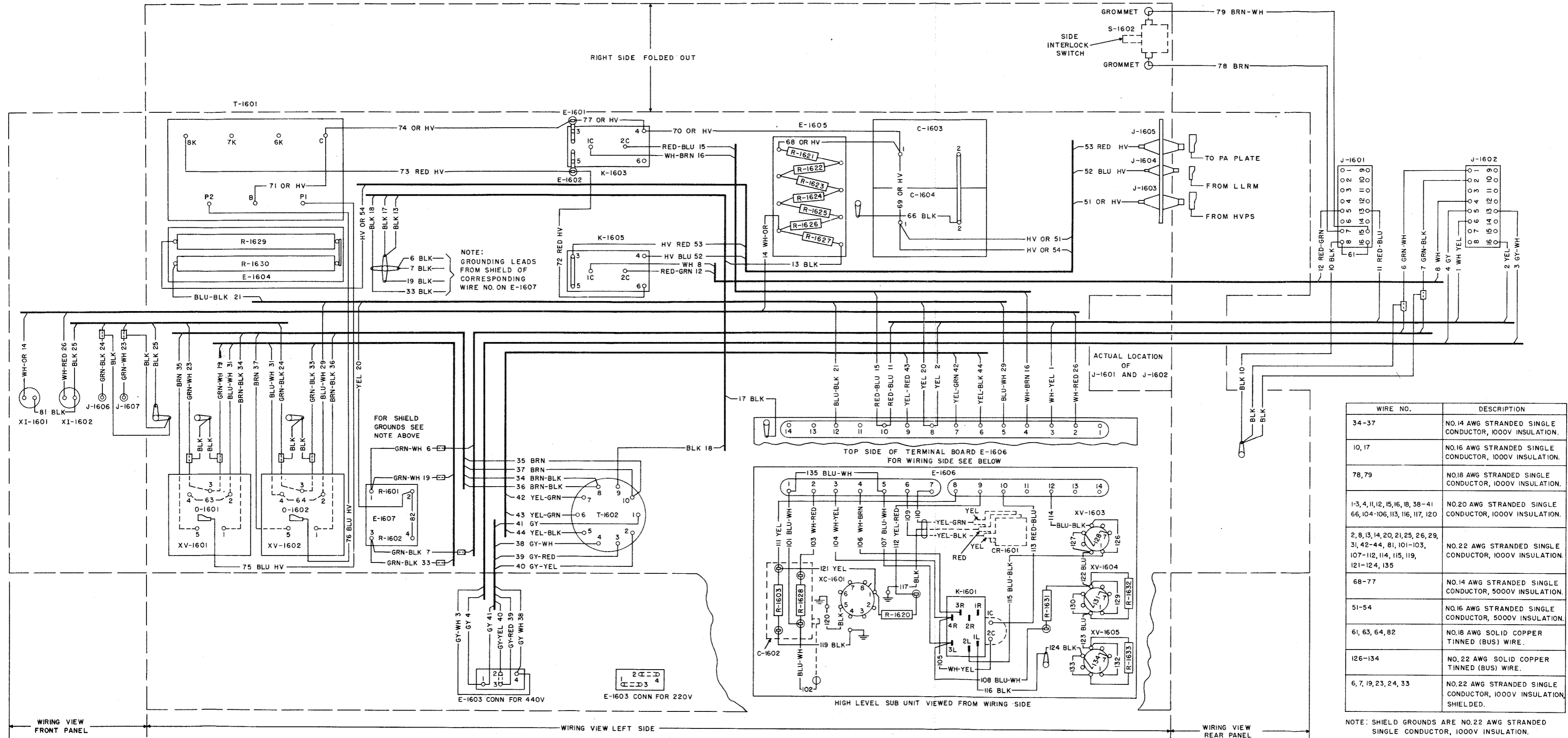
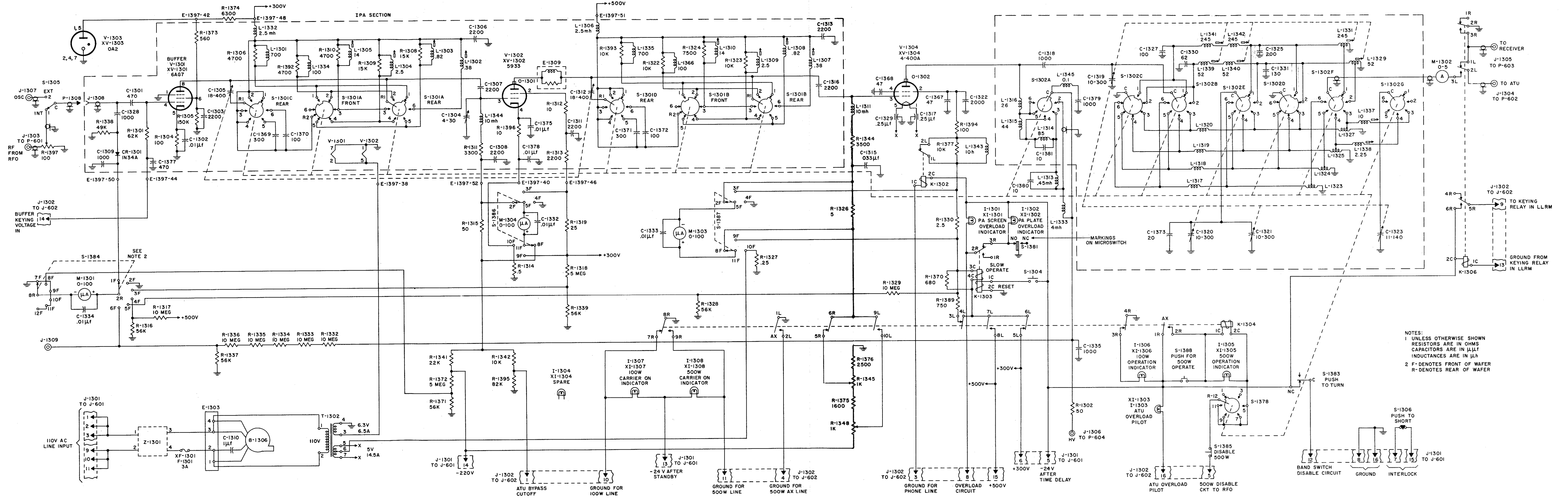


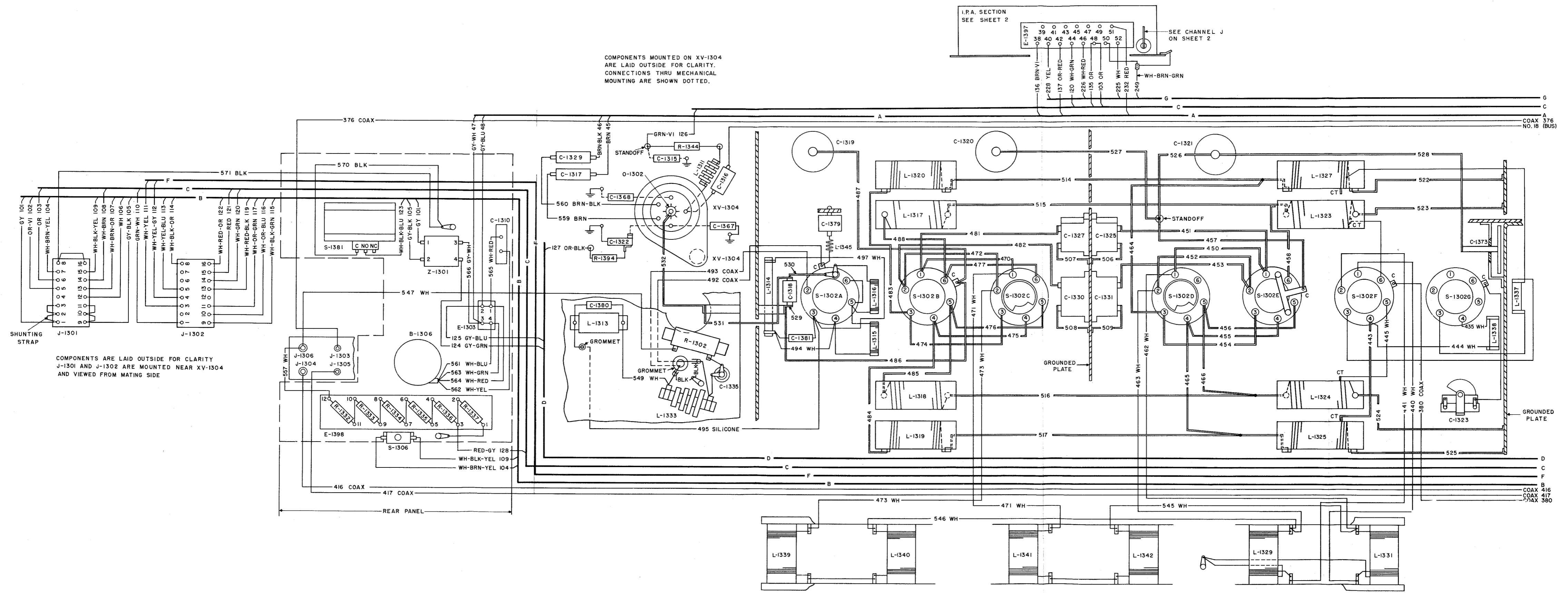
Figure 7-157. Radio Modulator MD-230/SRT (HLRM), Wiring Diagram



NOTES:
 1 UNLESS OTHERWISE SHOWN RESISTORS ARE IN OHMS CAPACITORS ARE IN $\mu\text{L}\mu\text{F}$ INDUCTANCES ARE IN μH
 2 F - DENOTES FRONT OF WAFER R - DENOTES REAR OF WAFER

Figure 7-158. Radio Frequency Amplifier AM-1008/SRT (RFA), Schematic Diagram

COMPONENTS MOUNTED ON XV-1304
ARE LAID OUTSIDE FOR CLARITY.
CONNECTIONS THRU MECHANICAL
MOUNTING ARE SHOWN DOTTED.

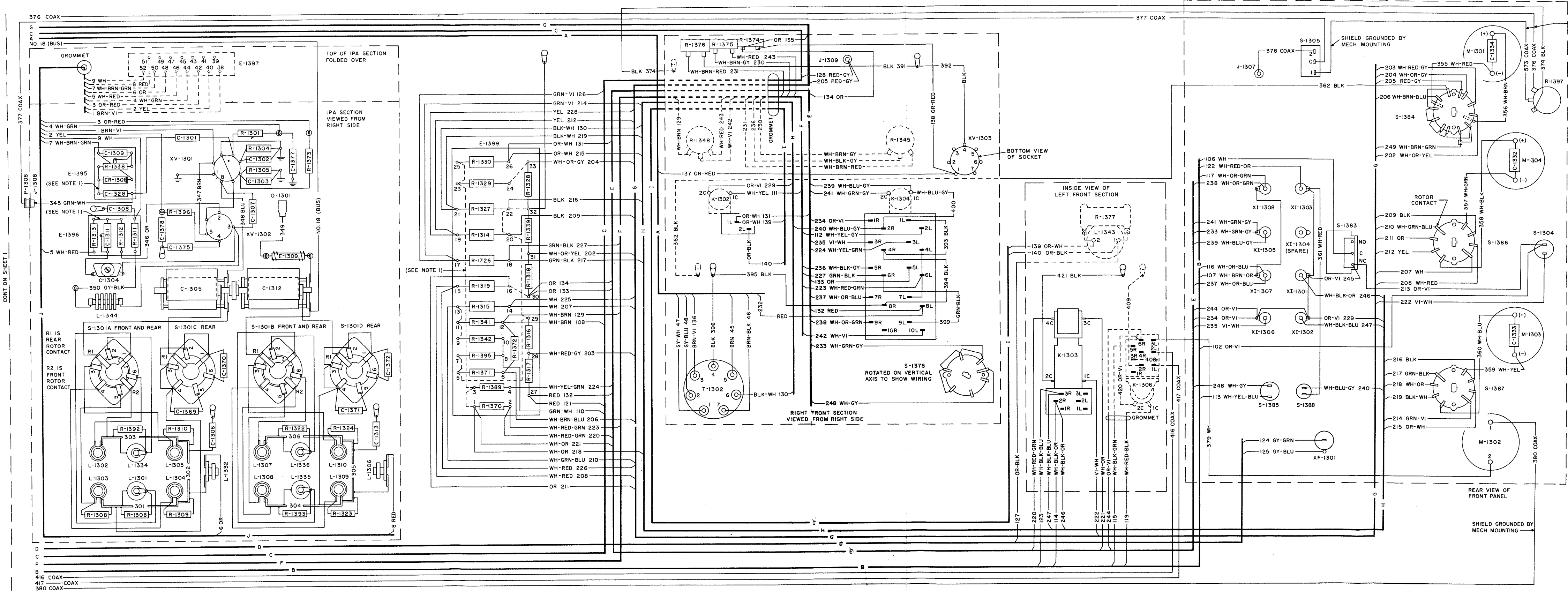


| I.P.A. SECTION SEE SHEET 2 | |
|-------------------------------|----|
| E-1397 | 30 |
| | 39 |
| | 40 |
| | 41 |
| | 42 |
| | 43 |
| | 44 |
| | 45 |
| | 46 |
| | 47 |
| | 48 |
| | 49 |
| | 50 |
| | 51 |
| | 52 |

SEE CHANNEL J
ON SHEET 2

COMPONENTS ARE LAID OUTSIDE FOR CLARITY
J-1301 AND J-1302 ARE MOUNTED NEAR XV-1304
AND VIEWED FROM MATING SIDE

Figure 7-159. Radio Frequency Amplifier AM-1008/SRT (RFA), Wiring Diagram (Sheet 1 of 2)



| WIRE NO. | DESCRIPTION |
|--|---|
| 45, 46, 559, 560 | NO. 12 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION |
| 104, 109 | NO. 16 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION |
| 119, 47, 48, 102, 106, 112, 113, 123, 130, 136, 213, 229, 248, 345, 348, 350, 374, 391-396, 421, 570, 571 | NO. 18 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION |
| 101, 105, 114, 116, 117, 124, 125, 237, 238, 400 | NO. 20 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION |
| 103, 107, 108, 110, 111, 115, 119-122, 126-129, 131-135, 137-140, 202-212, 214-228, 230-236, 239-247, 355-362, 399, 420, 561-566 | NO. 22 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION |
| 249 | NO. 22 AWG STRANDED SINGLE CONDUCTOR 1000V INSULATION, SHIELDED |
| 376-378, 380, 416, 417, 492, 493, 573 | RG-141/U COAX |
| 379, 435, 440, 441, 444, 445, 462, 463, 471, 473, 494, 497, 545-547, 549, 557 | NO. 19 AWG SOLID SINGLE CONDUCTOR, TEFLON INSULATED |
| 349, 408, 409 | TINNED COPPER BRAID |
| 443, 450-456, 464-466, 470, 472, 474-477, 481-486, 506-509, 514-517, 522-530, 532 | SOFT COPPER STRAP |
| 457, 458, 487, 488 | COPPER TUBING |
| 531 | NO. 10 AWG SOLID BARE COPPER TINNED |
| 301-306 | NO. 14 AWG SOLID BARE COPPER TINNED |
| ALL OTHERS (SEE NOTES BELOW) | NO. 18 AWG SOLID BARE COPPER TINNED |

NOTES:
1 POINT TO POINT WIRING ON TERMINAL BOARDS ARE NO. 20 AWG SOLID BARE COPPER TINNED WIRE.
2 SHIELD GROUNDS ARE NO. 22 AWG STRANDED SINGLE CONDUCTOR, BLACK, 1000V INSULATION, EXCEPT GROUND FOR LEADS 492 AND 493 THESE ARE NO 18.

Figure 7-159. Radio Frequency Amplifier AM-1008 (SRT) (RFA), Wiring Diagram (Sheet 2 of 2)

CORRECTIVE MAINTENANCE

NAVSHIPS 92121(A)
AN/SRT-14, 14A, 15, 15A, 16, 16A

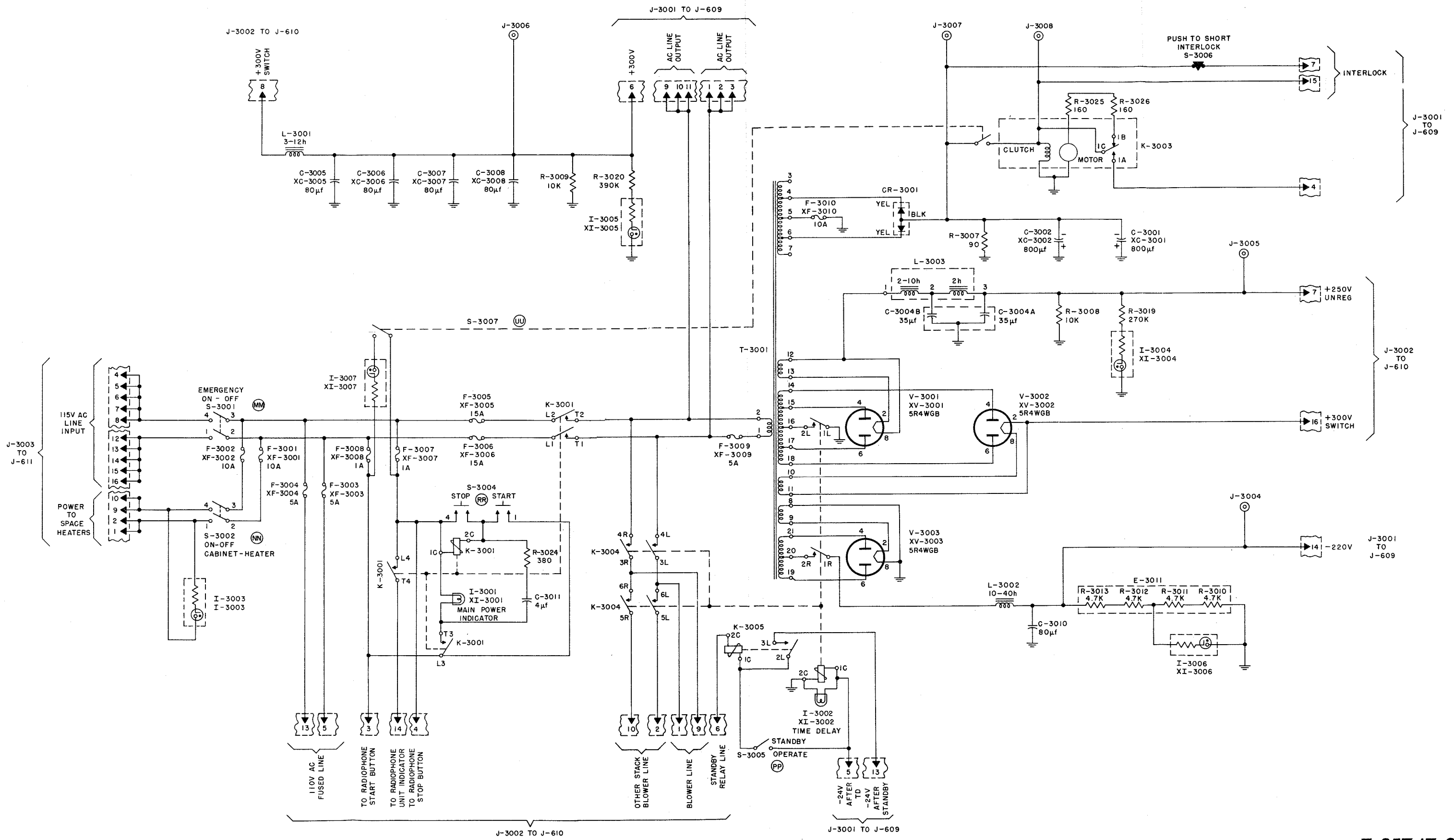
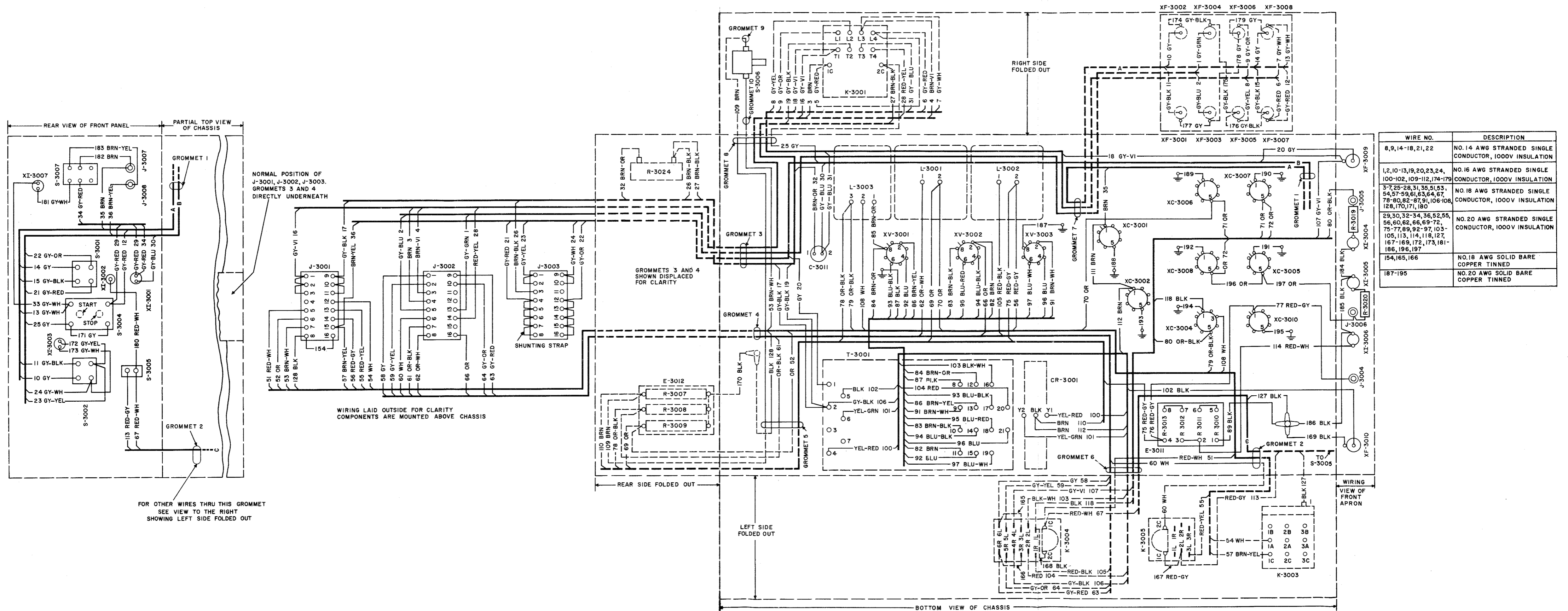


Figure 7-160. Power Supply PP-1094/SRT (LVPS), Schematic Diagram

ORIGINAL



| WIRE NO. | DESCRIPTION |
|--|---|
| 8,9,14-18,21,22 | NO.14 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION |
| 1,2,10-13,19,20,23,24, 100-102,109-112,174-179 | NO.16 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION |
| 3-7,25-28,31,35,51,53, 54,57-59,61,63,64,67, 78-80,82-87,91,106-108, 128,170,171,180 | NO.18 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION |
| 29,30,32-34,36,52,55, 56,60,62,66,69-72, 75-77,89,92-97,103-105,113,114,118,127, 167-169,172,173,181-186,196,197 | NO.20 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION |
| 154,165,166 | NO.18 AWG SOLID BARE COPPER TINNED |
| 187-195 | NO.20 AWG SOLID BARE COPPER TINNED |

ORIGINAL

Figure 7-161. Power Supply PP-1094/SRT (LVPS), Wiring Diagram

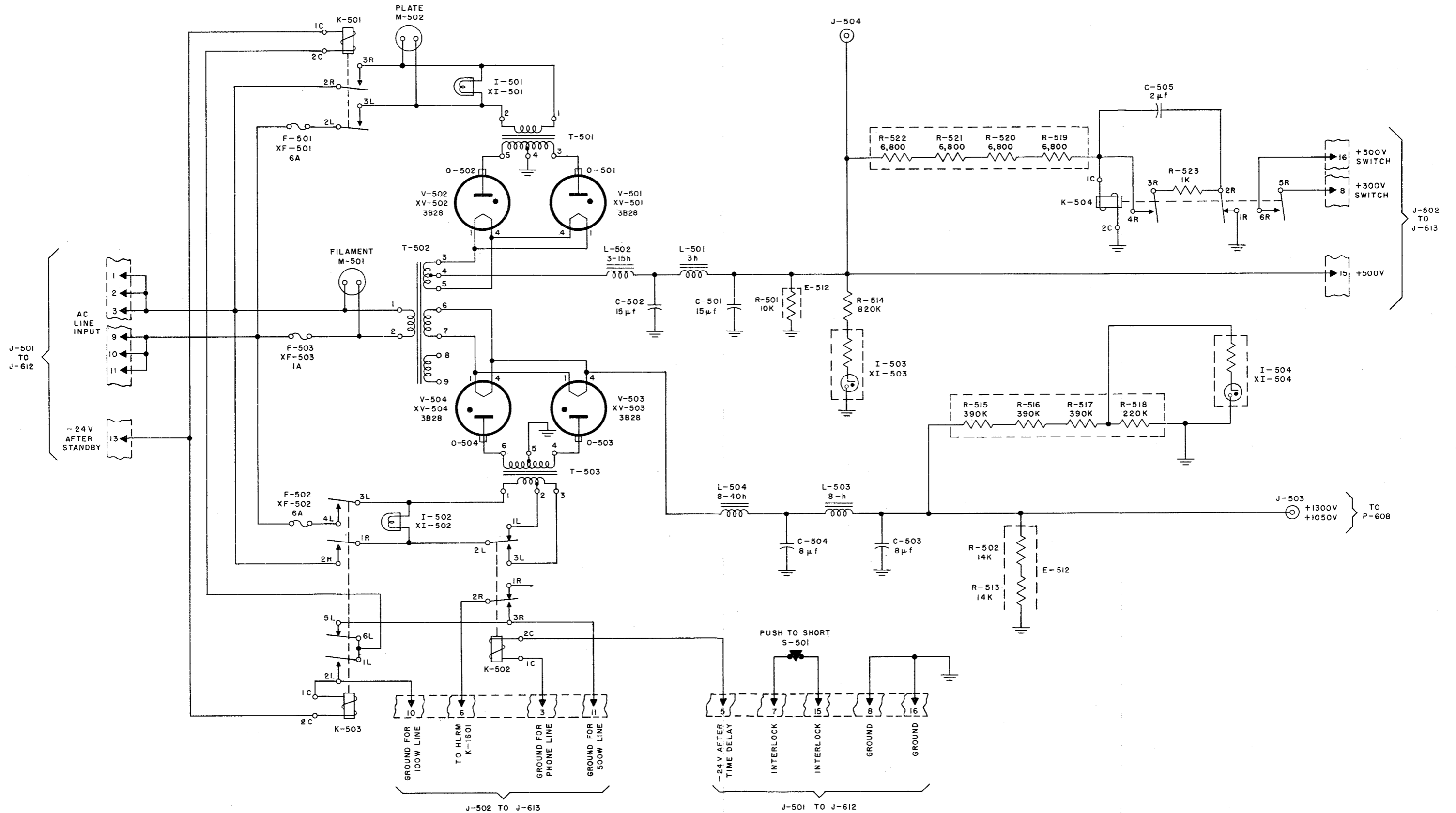


Figure 7-162. Power Supply PP-1095/SRT (MVPs), Schematic Diagram

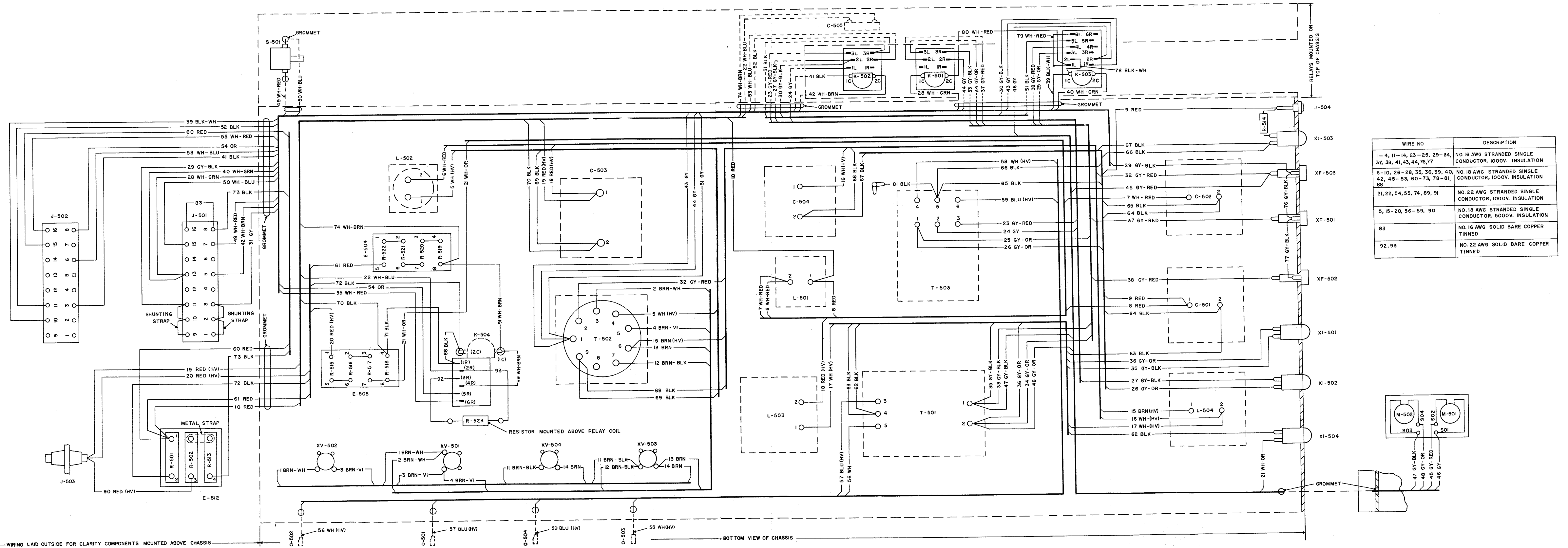
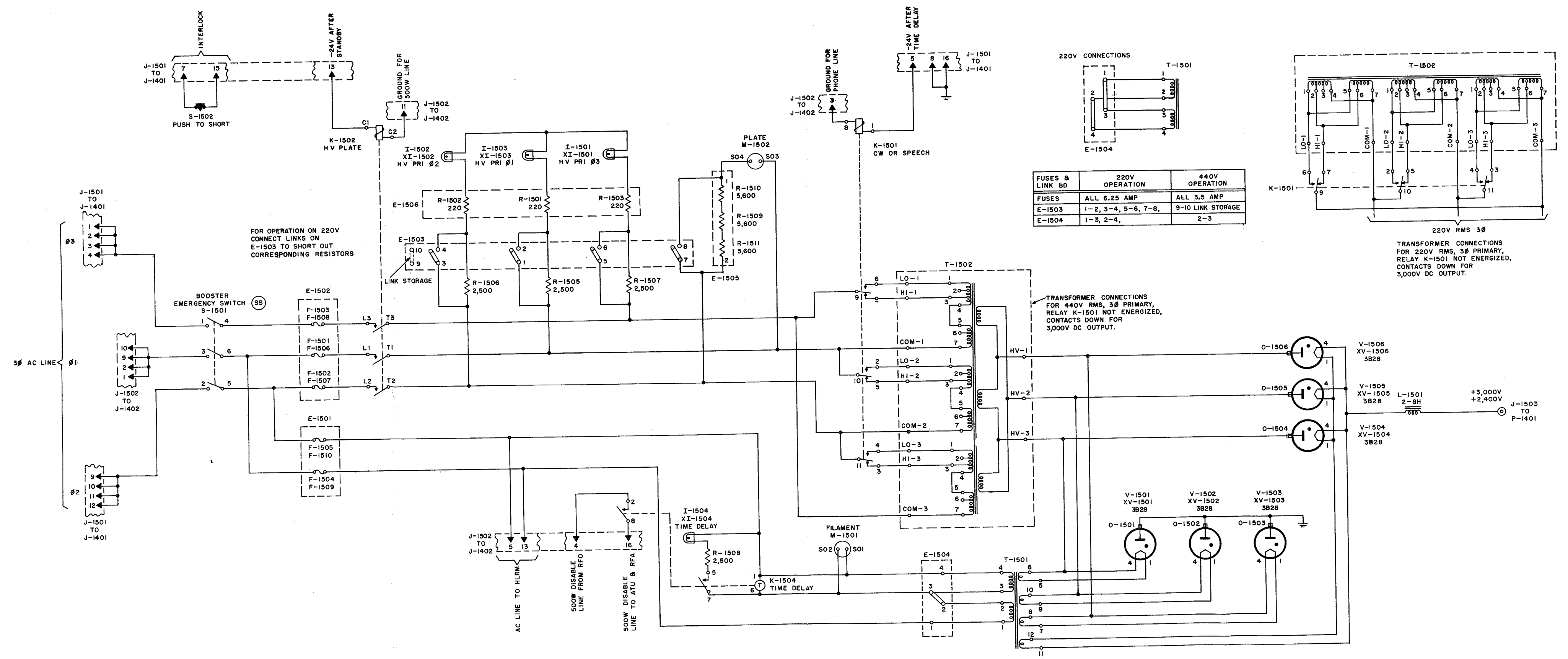
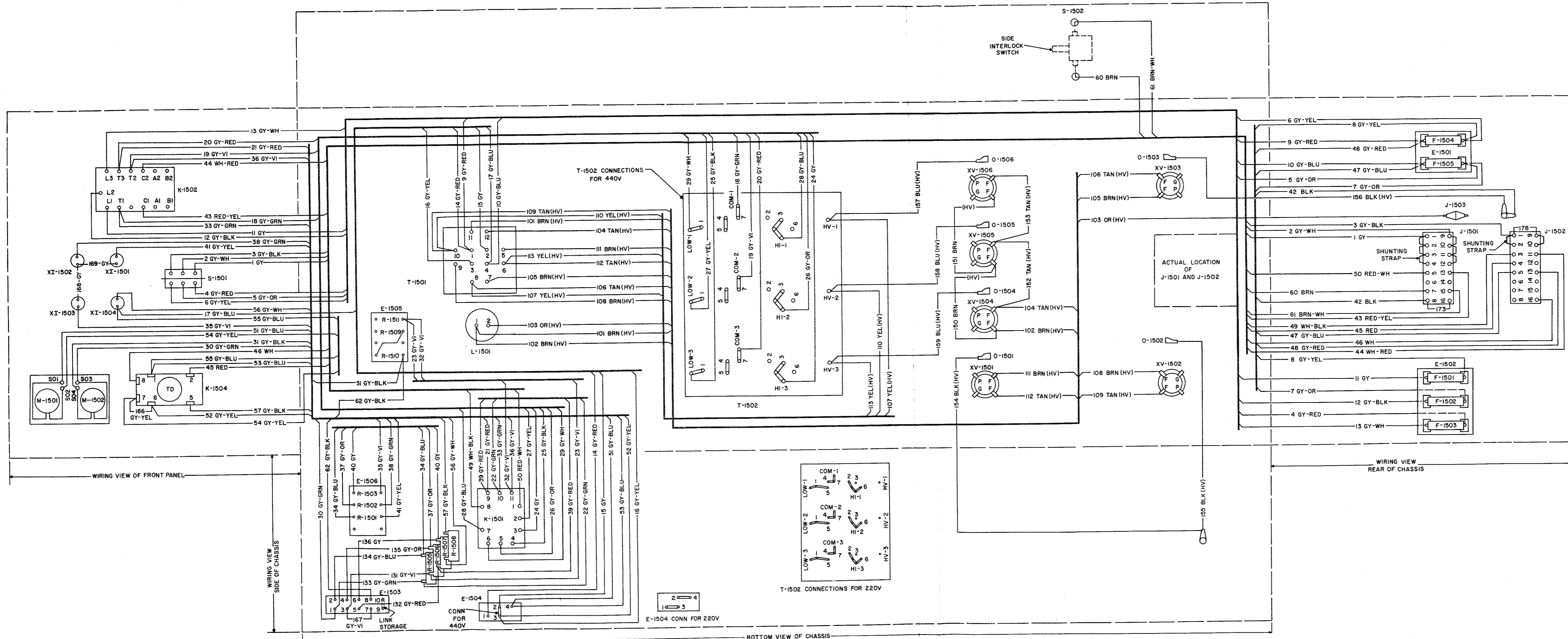


Figure 7-163. Power Supply PP-1095/SRT (MVPS), Wiring Diagram



ORIGINAL

Figure 7-164. Power Supply PP-1096/SRT (HVPS), Schematic Diagram



| WIRE NO. | DESCRIPTION |
|---|--|
| 1-8, 11-13, 18-21, 24-29, 33, 36, 42 | NO. 16 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION |
| 60, 61 | NO. 18 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION |
| 9, 10, 14-17, 22, 23, 30-32, 34, 35, 37-41, 43-57, 62, 131-136, 166-169 | NO. 20 AWG STRANDED SINGLE CONDUCTOR, 5000V INSULATION |
| 101, 102, 104, 150-153 | NO. 14 AWG STRANDED SINGLE CONDUCTOR, 5000V INSULATION |
| 103, 105-113, 157-159 | NO. 16 AWG STRANDED SINGLE CONDUCTOR, 5000V INSULATION |
| 154-156 | NO. 20 AWG STRANDED SINGLE CONDUCTOR, 5000V INSULATION |
| 173, 178 | NO. 18 AWG SOLID BARE COPPER TINNED |

Figure 7-165. Power Supply PP-1096/SRT (HVPS), Wiring Diagram

ORIGINAL

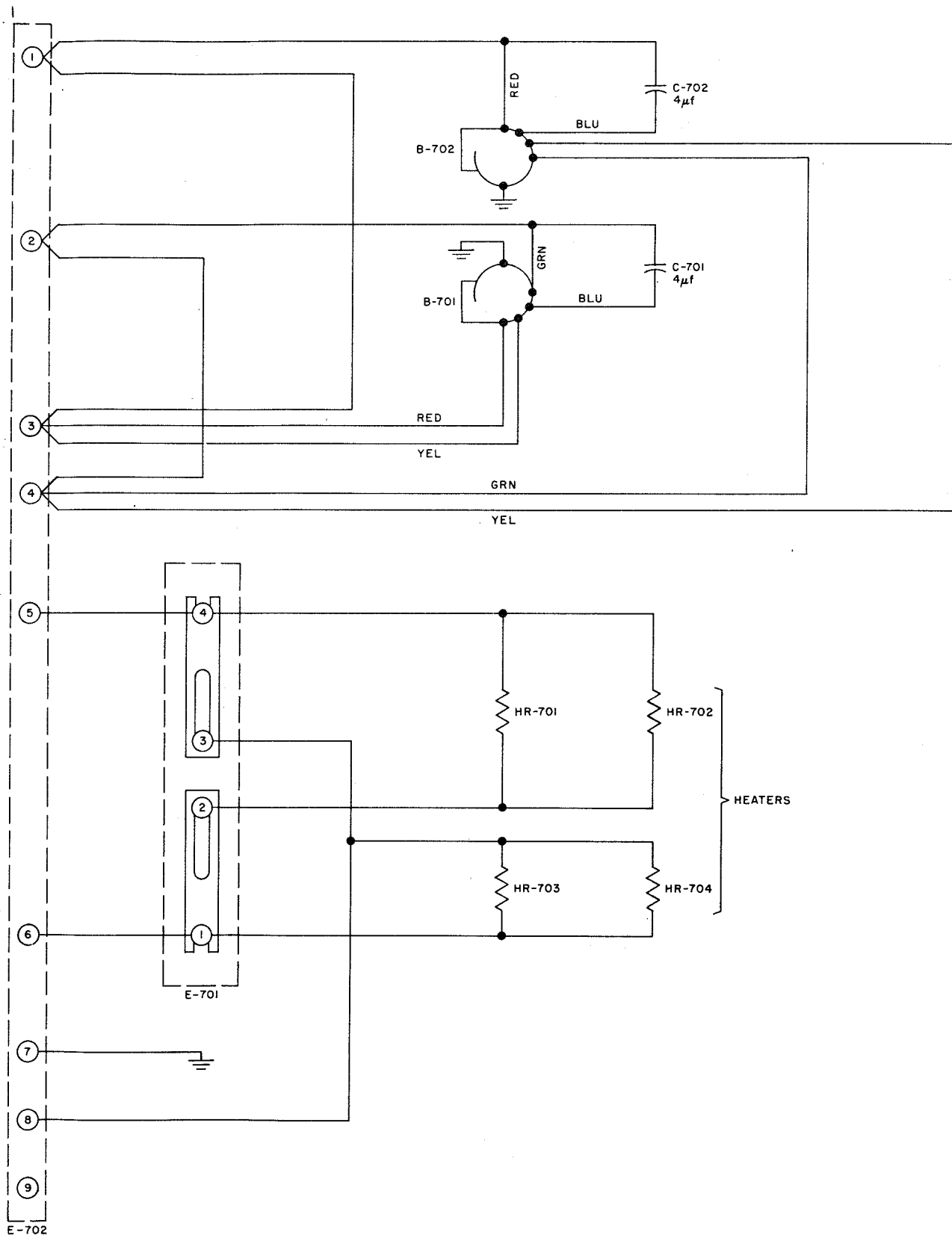
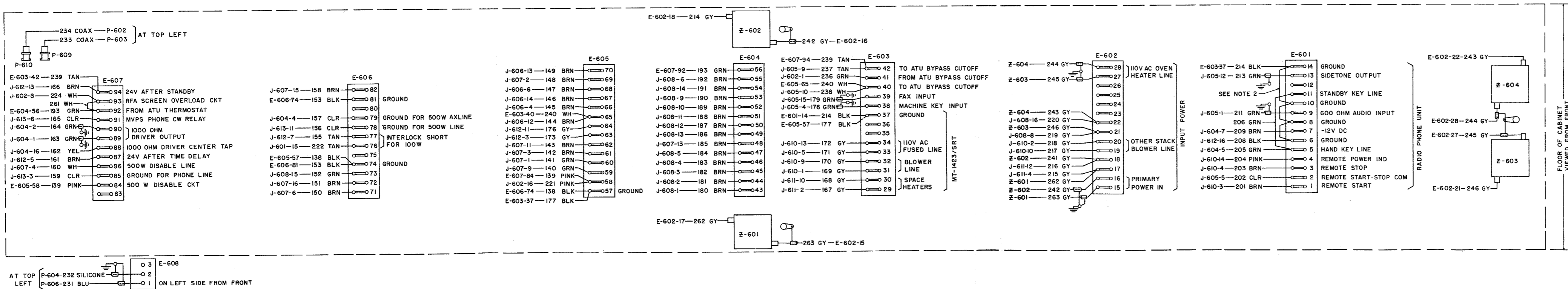
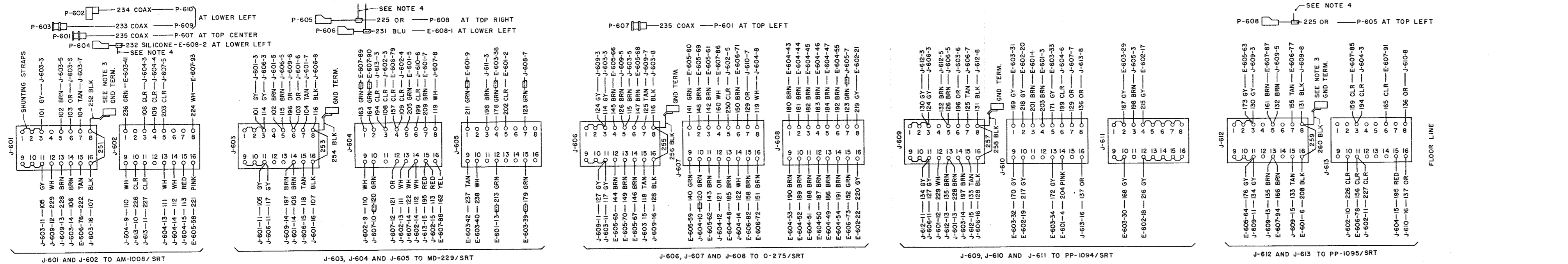


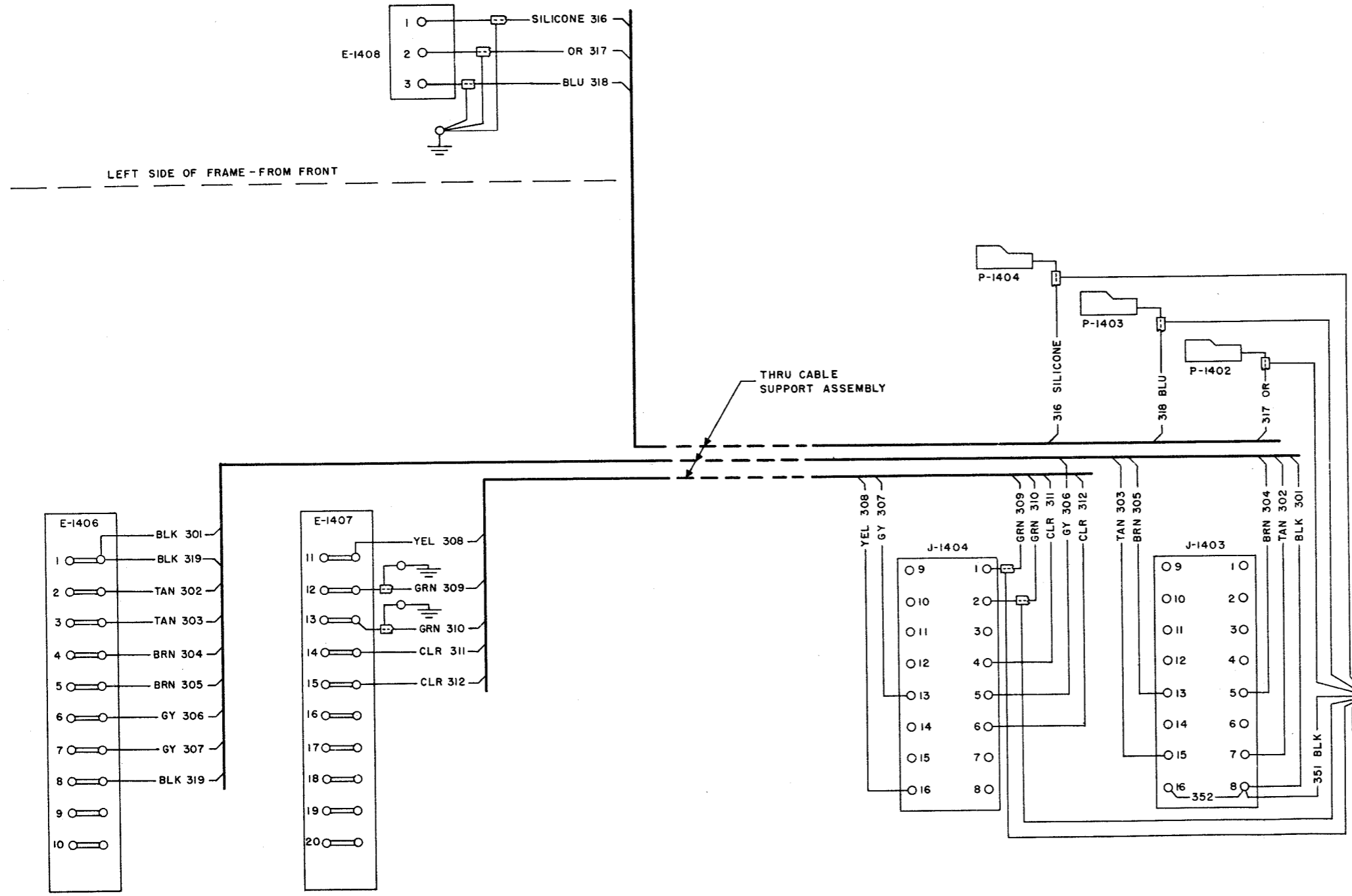
Figure 7-166. Mounting MT-1423/SRT, Schematic Diagram



| WIRE NO. | DESCRIPTION |
|--|--|
| 130, 134, 215, 216, 241, 262 | NO.14 AWG STRANDED SINGLE CONDUCTOR, 2500V INSULATION |
| 107, 116, 128, 131, 138, 153, 167, 168, 177, 208, 214 | NO.16 AWG STRANDED SINGLE CONDUCTOR, 2500V INSULATION |
| 101, 104, 105, 114, 117, 118, 124, 125, 127, 133, 144, 145, 155, 158, 171-173, 176, 198, 201-204, 222, 229, 237-240, 252, 254, 256, 258, 260 | NO.18 AWG STRANDED SINGLE CONDUCTOR, 2500V INSULATION |
| 102, 106, 115, 126, 132, 135, 143, 146, 147, 149-151, 161, 166, 169, 170, 180-193, 217-220, 228, 243, 246, 261 | NO.20 AWG STRANDED SINGLE CONDUCTOR, 2500V INSULATION |
| 103, 108-113, 119, 121, 122, 123, 136, 137, 139-142, 148, 152, 156, 157, 159, 160, 162, 165, 194-197, 199, 205, 206, 209, 221, 224, 226, 227, 230, 236 | NO.22 AWG STRANDED SINGLE CONDUCTOR, 2500V INSULATION |
| 242, 263 | NO.14 AWG STRANDED SINGLE CONDUCTOR, 2500V INSULATION (SHIELDED) |
| 225, 231, 232 | NO.16 AWG STRANDED SINGLE CONDUCTOR, 5000V INSULATION (SHIELDED) |
| 244, 245 | NO.20 AWG STRANDED SINGLE CONDUCTOR, 2500V INSULATION (SHIELDED) |
| 120, 123, 163, 164, 178, 179, 211, 213 | NO.22 AWG STRANDED SINGLE CONDUCTOR, 2500V INSULATION (SHIELDED) |
| 233-235 | TEFLON COAX RG-U/141 |
| 251, 253, 255, 257, 259 | NO.18 AWG SOLID COPPER, TINNED (BUS) WIRE |

- NOTES:
- SHIELD GROUNDS ARE NO.20 AWG STRANDED SINGLE CONDUCTOR, BLACK, 2500V INSULATION.
 - POINT TO POINT WIRING ON E-601 IS NO.16 AWG STRANDED SINGLE CONDUCTOR, BLACK, 2500V INSULATION.
 - ALL GROUND LEADS AT EACH CONNECTOR ASSEMBLY ARE CONNECTED TO THE GROUND TERMINAL FOR EACH ASSEMBLY.
 - GROUND LEADS OF P-604, P-605, P-606 AND P-608 CONNECT TO THE NEAREST GROUND TERMINAL OF CORRESPONDING CONNECTOR ASSEMBLY.
 - SPECIAL COLOR ABBREVIATION
 CLEAR CLR
 TAN TAN
 PINK PINK

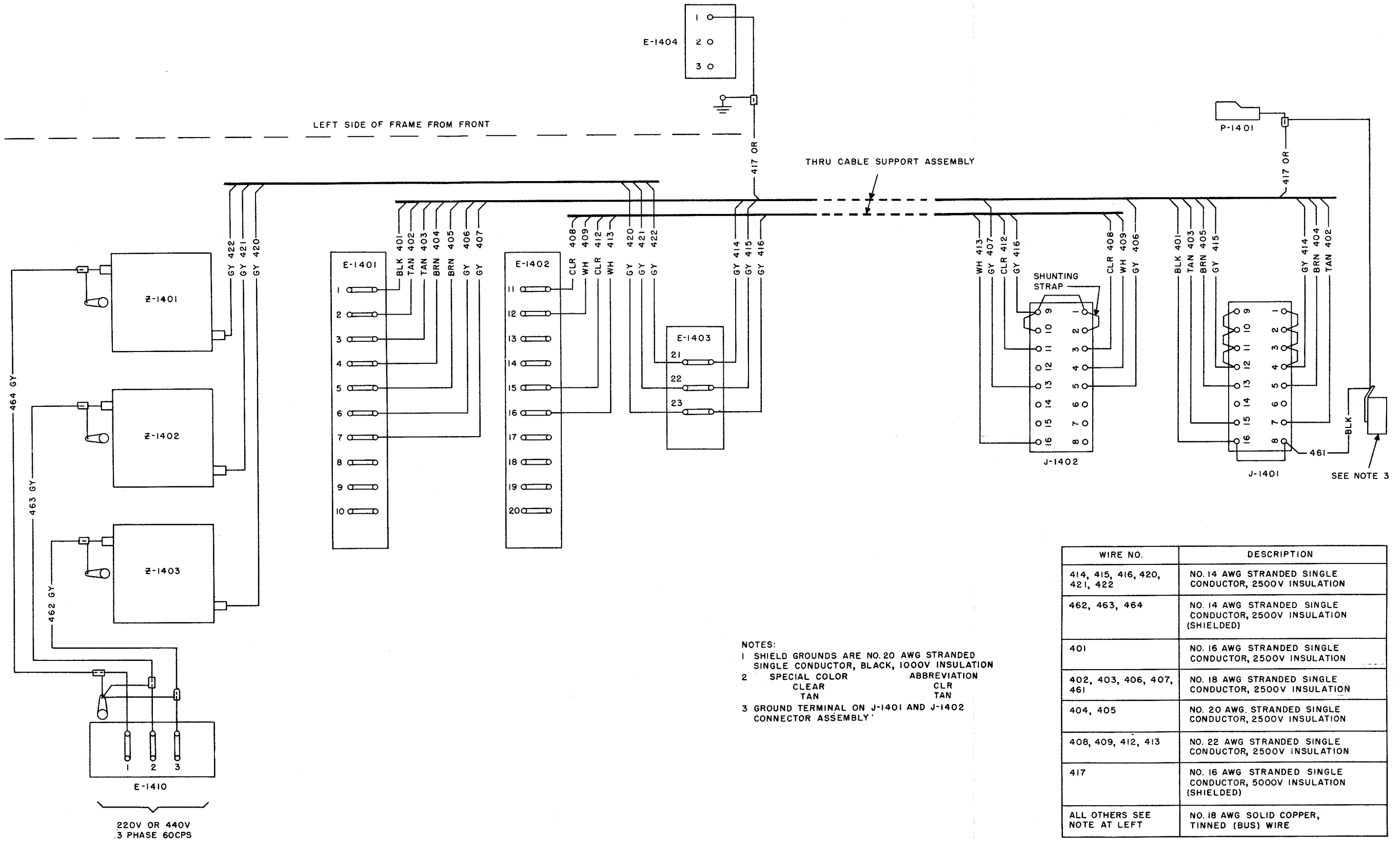
Figure 7-167. Electrical Equipment Cabinet CY-1571/SRT (100 W. Frame), Wiring Diagram



| WIRE NO. | DESCRIPTION |
|-------------------------|---|
| 301, 319 | NO. 16 AWG STRANDED SINGLE CONDUCTOR, 2500V INSULATION |
| 302, 303, 306, 307, 351 | NO. 18 AWG STRANDED SINGLE CONDUCTOR, 2500V INSULATION |
| 304, 305 | NO. 20 AWG STRANDED SINGLE CONDUCTOR, 2500V INSULATION |
| 308, 311, 312 | NO. 22 AWG STRANDED SINGLE CONDUCTOR, 2500V INSULATION |
| 316, 317, 318 | NO. 16 AWG STRANDED SINGLE CONDUCTOR, 5000V INSULATION (SHIELDED) |
| 309, 310 | NO. 22 AWG STRANDED SINGLE CONDUCTOR, 2500V INSULATION (SHIELDED) |
| 352 | NO. 18 AWG SOLID COPPER, TINNED (BUS) WIRE |

NOTES:

- 1 SHIELD GROUNDS ARE NO. 20 AWG STRANDED SINGLE CONDUCTOR, BLACK, 1000V INSULATION.
- 2 SPECIAL COLOR ABBREVIATION
CLEAR CLR
TAN TAN
- 3 GROUND TERMINAL ON J-1403 AND J-1404 CONNECTOR ASSEMBLY.



- NOTES:
 1 SHIELD GROUNDS ARE NO.20 AWG STRANDED SINGLE CONDUCTOR, BLACK, 1000V INSULATION
 2 SPECIAL COLOR ABBREVIATION
 CLEAR CLR
 TAN TAN
 3 GROUND TERMINAL ON J-1401 AND J-1402 CONNECTOR ASSEMBLY

| WIRE NO. | DESCRIPTION |
|------------------------------|--|
| 414, 415, 416, 420, 421, 422 | NO.14 AWG STRANDED SINGLE CONDUCTOR, 2500V INSULATION |
| 462, 463, 464 | NO.14 AWG STRANDED SINGLE CONDUCTOR, 2500V INSULATION (SHIELDED) |
| 401 | NO.16 AWG STRANDED SINGLE CONDUCTOR, 2500V INSULATION |
| 402, 403, 406, 407, 461 | NO.18 AWG STRANDED SINGLE CONDUCTOR, 2500V INSULATION |
| 404, 405 | NO.20 AWG. STRANDED SINGLE CONDUCTOR, 2500V INSULATION |
| 408, 409, 412, 413 | NO.22 AWG STRANDED SINGLE CONDUCTOR, 2500V INSULATION |
| 417 | NO.16 AWG STRANDED SINGLE CONDUCTOR, 5000V INSULATION (SHIELDED) |
| ALL OTHERS SEE NOTE AT LEFT | NO.18 AWG SOLID COPPER, TINNED (BUS) WIRE |

Figure 7-169. Electrical Equipment Cabinet CY-1573/SRT (HVPS Frame), Wiring Diagram

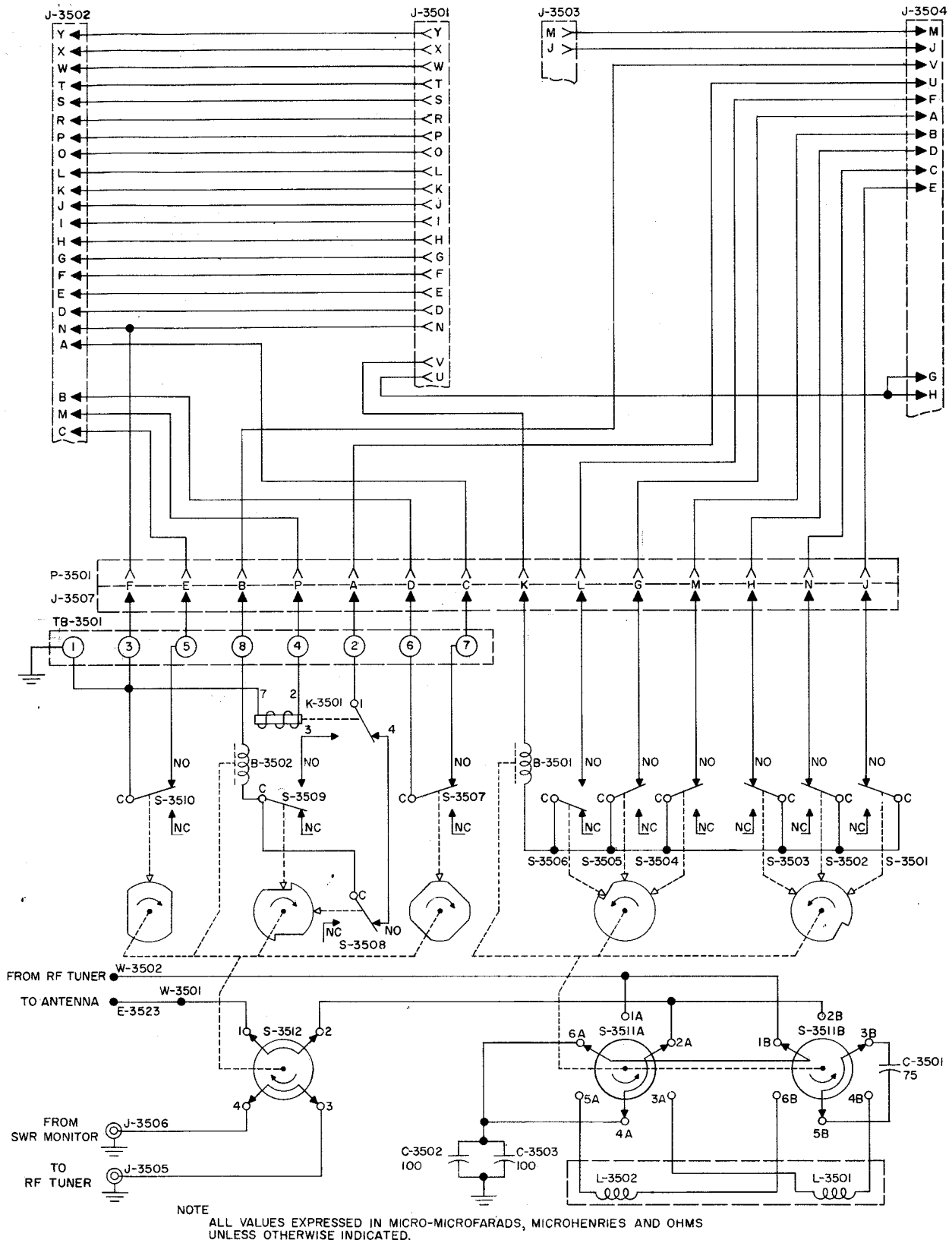
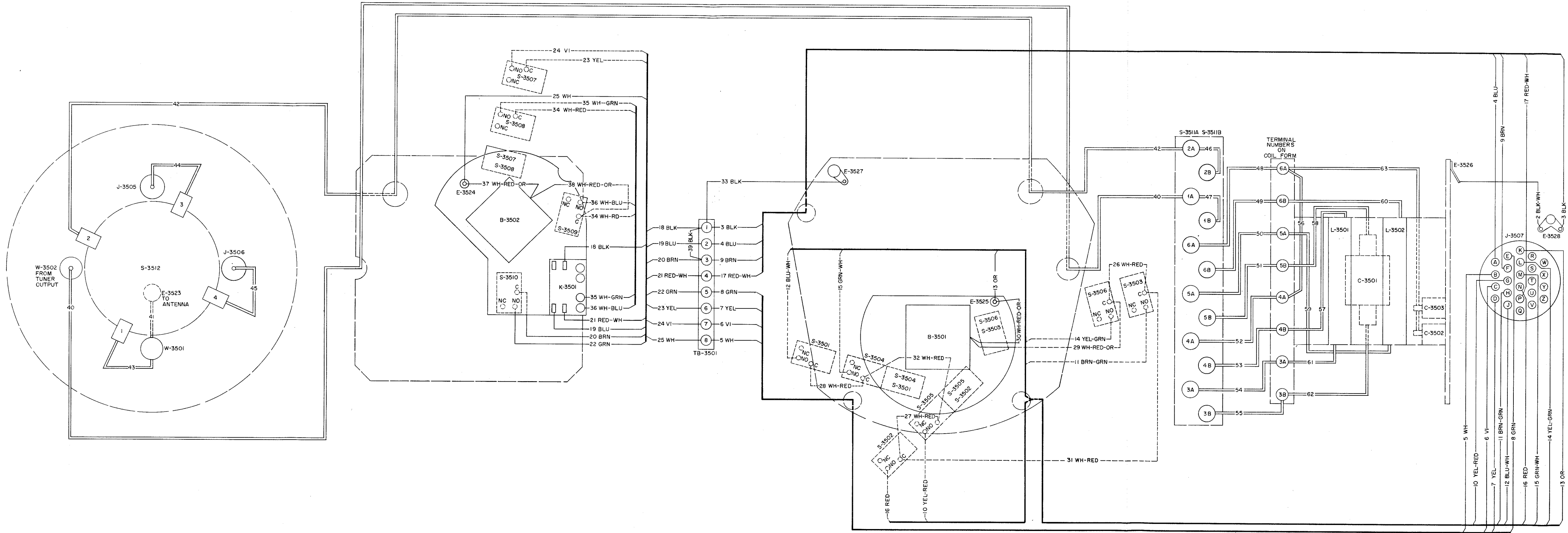


Figure 7-170. Antenna Coupler CU-372/SRT, Schematic Diagram



J-3507 MATES WITH P-3501
IN
JUNCTION BOX ASSEMBLY
(SHEET 2)

| WIRE NO. | DESCRIPTION |
|--------------|---|
| 2-39, 65-101 | NO. 16 AWG STRANDED SINGLE CONDUCTOR, 1000V INSULATION. |
| 40 | HV CONDUCTOR, RG-19/U (LESS OUTER COVER AND WIRE BRAID), OR EQUIVALENT. |
| 41 | NO. 5 AWG SILVER CLAD COPPER CONDUCTOR. |
| 42-61 | NO. 7 AWG SILVER CLAD COPPER CONDUCTOR. |
| 62, 63 | NO. 8 AWG SILVER CLAD COPPER CONDUCTOR. |

ORIGINAL

Figure 7-171. Antenna Coupler CU-372/SRT, Wiring Diagram (Sheet 1 of 2)

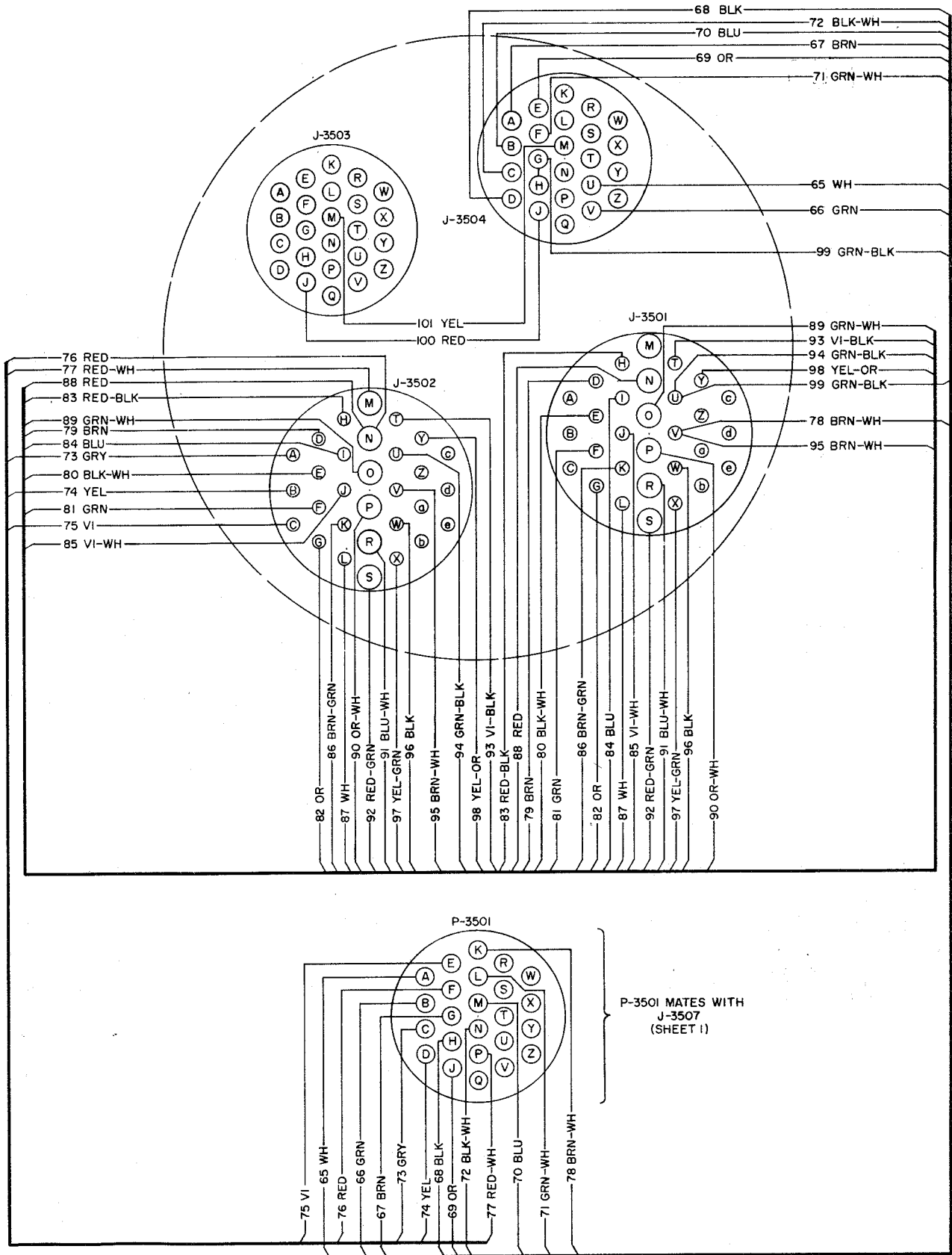
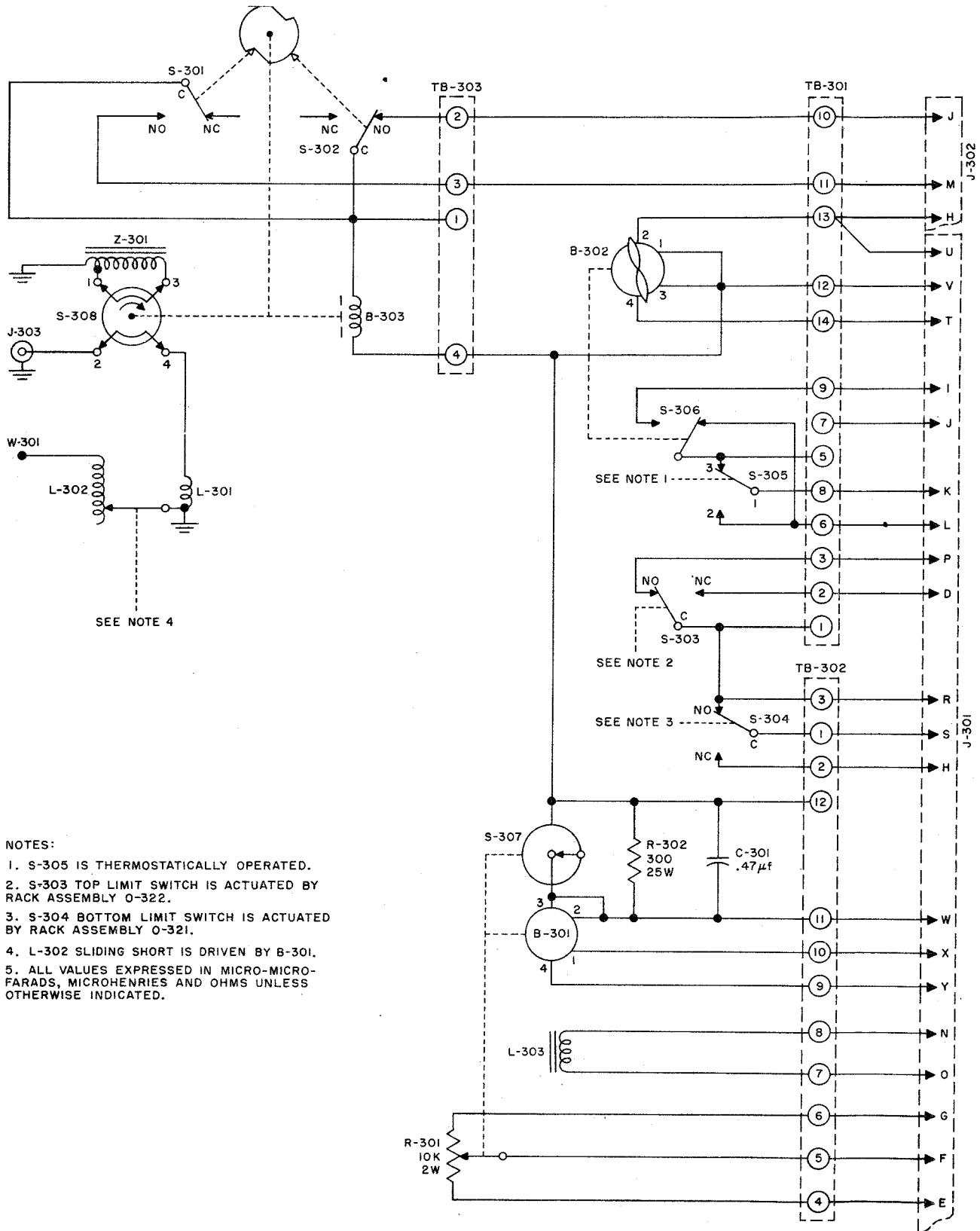
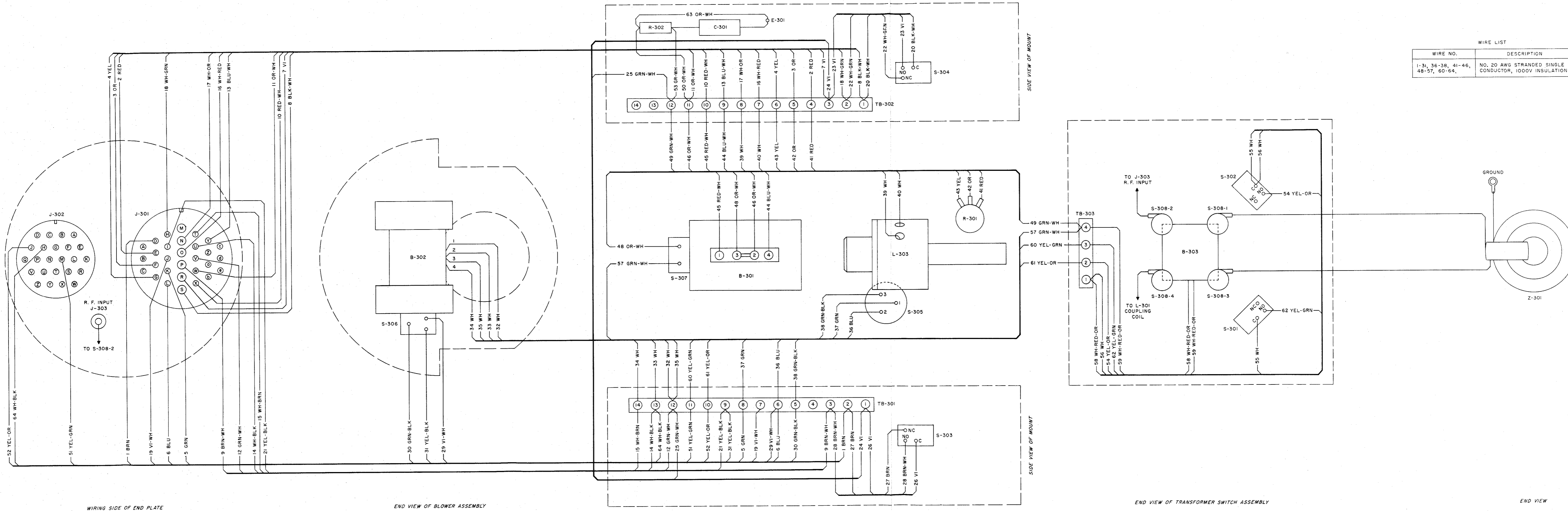


Figure 7-171. Antenna Coupler CU-372/SRT, Wiring Diagram (Sheet 2 of 2)



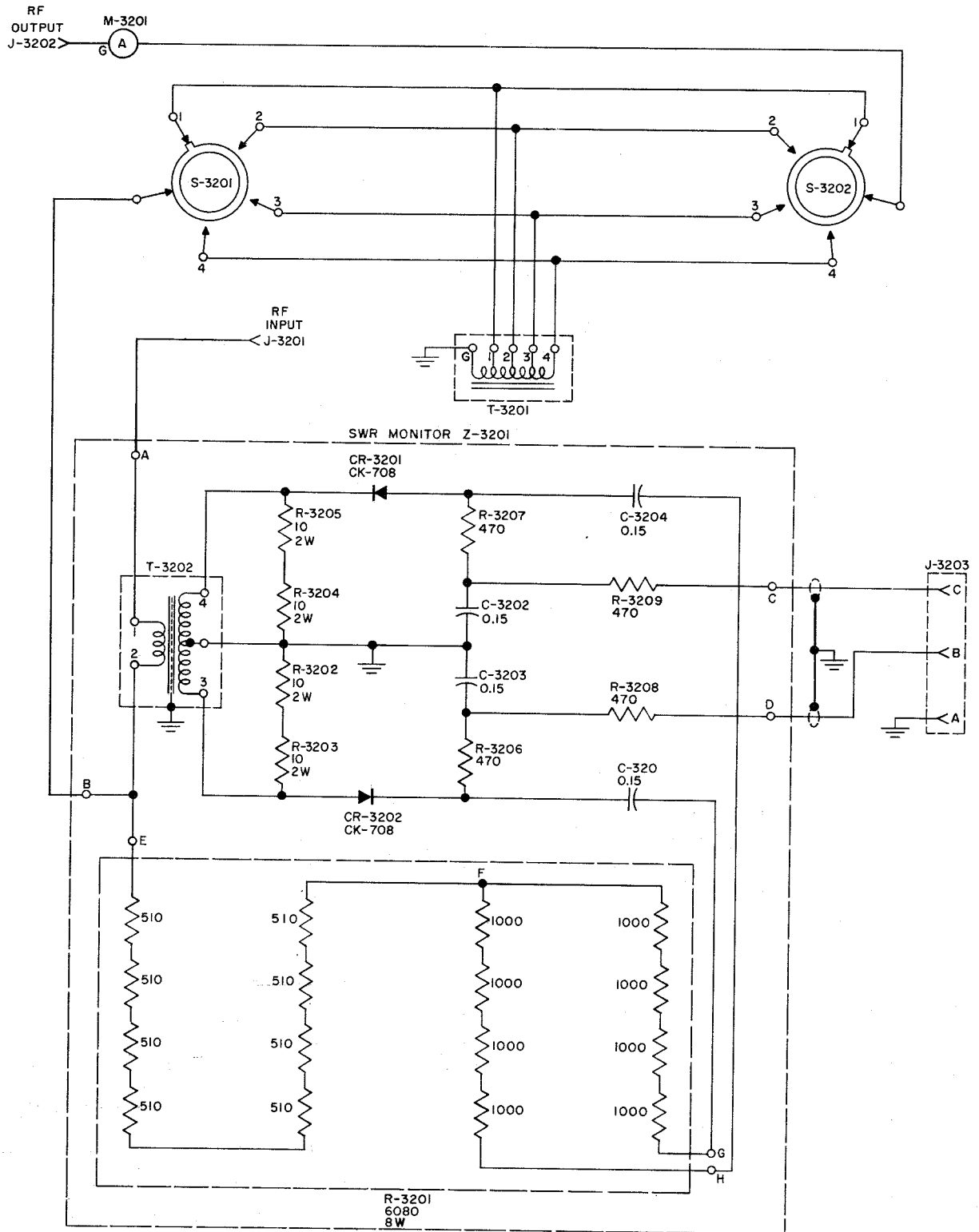
- NOTES:
1. S-305 IS THERMOSTATICALLY OPERATED.
 2. S-303 TOP LIMIT SWITCH IS ACTUATED BY RACK ASSEMBLY O-322.
 3. S-304 BOTTOM LIMIT SWITCH IS ACTUATED BY RACK ASSEMBLY O-321.
 4. L-302 SLIDING SHORT IS DRIVEN BY B-301.
 5. ALL VALUES EXPRESSED IN MICRO-MICRO-FARADS, MICROHENRIES AND OHMS UNLESS OTHERWISE INDICATED.

Figure 7-172. R-F Tuner TN-229/SRT, Schematic Diagram



ORIGINAL

Figure 7-173. R-F Tuner TN-229/SRT, Wiring Diagram



NOTE:
RESISTANCE IN OHMS, CAPACITANCE IN MICROFARADS,
UNLESS OTHERWISE INDICATED.

Figure 7-174. Transmitter Coupler CU-402/SRT, Schematic Diagram

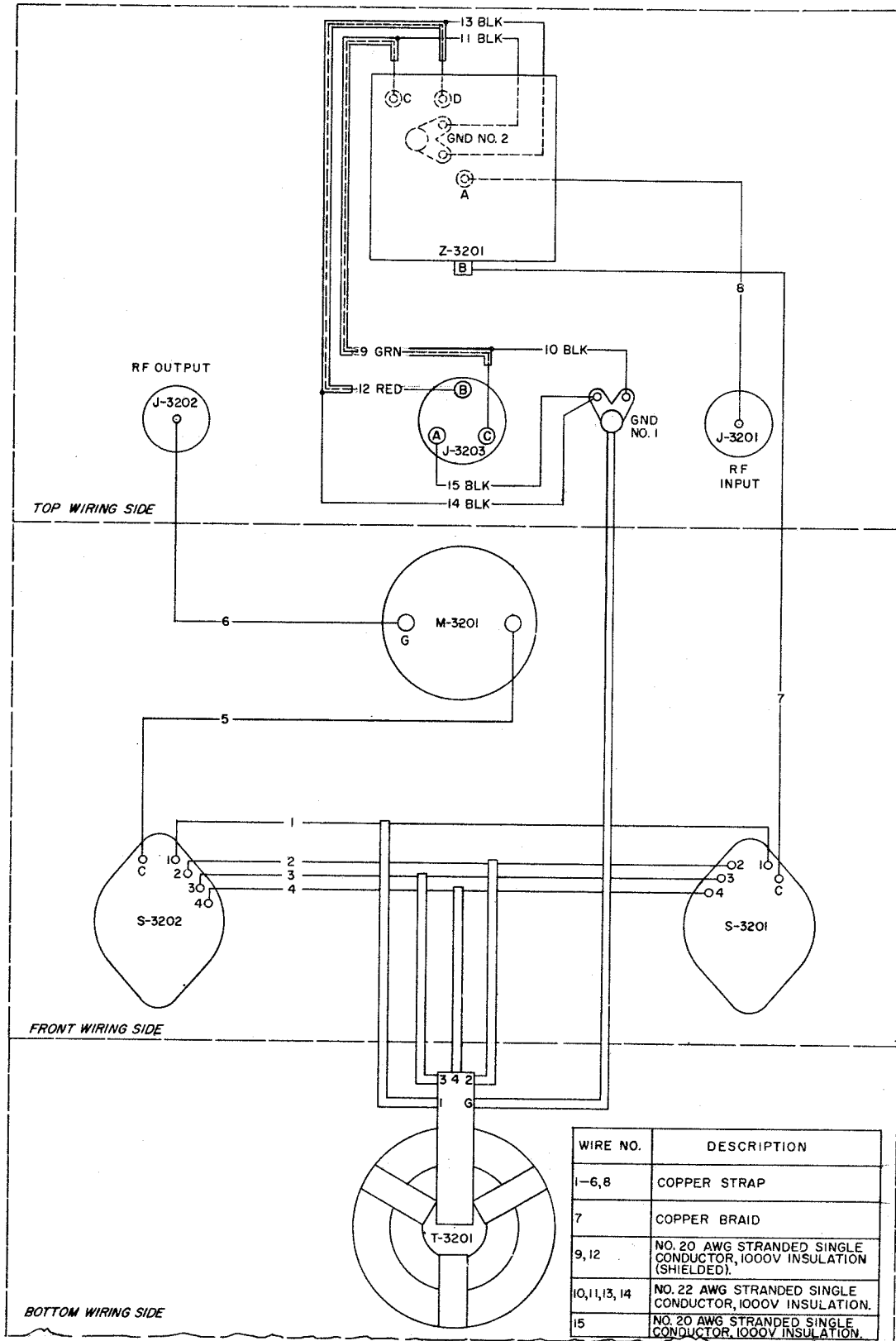


Figure 7-175. Transmitter Coupler CU-402/SRT, Wiring Diagram

★
NAVSHIPS 92121(A)

INSTRUCTION BOOK

for

RADIO TRANSMITTING SETS

AN/SRT-14, AN/SRT-14A, AN/SRT-15,
AN/SRT-15A, AN/SRT-16 AND AN/SRT-16A

SECTION 8
PARTS LISTS

FEDERAL TELEPHONE AND RADIO COMPANY

A division of INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

CLIFTON, NEW JERSEY

DEPARTMENT OF THE NAVY

BUREAU OF SHIPS

★
*Contract: NObsr-52021
NObsr-52622*

Approved by BuShips: 26 October 1955

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| 8 | Parts Lists |

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TABLE 8-1. WEIGHTS AND DIMENSIONS OF SPARE PARTS BOXES
EQUIPMENT SPARES

| SHIPPING BOX IDENTIFICATION | OVERALL DIMENSIONS | | | VOLUME | WEIGHT | QUANTITY | | |
|---|--------------------|-------|-------|--------|--------|----------|--------|--------|
| | HEIGHT | WIDTH | DEPTH | | | SRT-14 | SRT-15 | SRT-16 |
| ANTENNA COUPLER CU-372/SRT | 8 | 7 | 7 | .2 | 2.5 | 1 | 1 | 2 |
| MODULATOR-POWER SUPPLY GROUP OA-685/SRT | 22 | 18 | 13 | 2.9 | 106 | - | 1 | 1 |
| MOUNTING MT-1423/SRT | 13 | 11 | 11 | .9 | 9 | 1 | 2 | 2 |
| RADIO FREQUENCY TUNER TN-229/SRT | 17 | 12 | 11 | 1.3 | 24 | 1 | 1 | 2 |
| TRANSFORMER, POWER, STEP-UP: T-1502 | 19 | 15 | 14 | 2.3 | 88 | - | 1 | 1 |
| *TRANSMITTER GROUP OA-684/SRT | 29 | 23 | 20 | 7.7 | 130 | 1 | 1 | 2 |

NOTE:

- Shipping weights and dimensions are exactly the same as above.
- *Equipment spares for the Control Indicator C-1352/SRT and Transmitter Coupler CU-402/SRT are included in this box.

TABLE 8-2. LIST OF MAJOR UNITS

| SYMBOL GROUP | QUANTITY | | | GROUP QTY | NAME OF MAJOR UNIT | AN NOMENCLATURE | STANDARD NAVY STOCK NUMBER |
|--|-----------|-----|-----|------------------|--|---|---|
| | AN/SRT-14 | -15 | -16 | | | | |
| 301-399 | 1 | 1 | 2 | | RADIO FREQUENCY TUNER | TN-229/SRT | F16-T-98018-8760 |
| 2001-2999, 401-499 501-599 601-699 | 1 | 1 | 2 | 1 | *TRANSMITTER GROUP, consisting of: RADIO FREQUENCY OSCILLATOR ♦CONTROL INDICATOR POWER SUPPLY *ELECTRICAL EQUIPMENT CABINET | OA-684/SRT O-275/SRT C-1352/SRT PP-1095/SRT CY-1571/SRT | F16-T-42951-1008 #F16-T-42951-1009 F16-O-53250-7644 F16-C-89543-8001 F16-P-67929-2998 F16-C-10654-6564 #F16-C-10654-6563 |
| 1001-1299 1301-1399 3001-3099 3201-3299 | | | | 1 1 1 1 | RADIO MODULATOR RADIO FREQUENCY AMPLIFIER POWER SUPPLY TRANSMITTER COUPLER | MD-229/SRT AM-1008/SRT PP-1094/SRT CU-402/SRT | F16-M-42274-2541 F16-A-33460-1003 F16-P-68408-2451 F16-C-92096-1008 |
| 701-799 | 1 | 2 | 2 | | MOUNTING | MT-1423/SRT | F16-R-400984-104 |
| 1401-1499 1401-1499 1501-1599 1601-1699 | | 1 | 1 | 1 1 1 1 | *MODULATOR-POWER SUPPLY GROUP, consisting of: *ELECTRICAL EQUIPMENT CABINET *ELECTRICAL EQUIPMENT CABINET POWER SUPPLY RADIO MODULATOR | OA-685/SRT CY-1573/SRT CY-1572/SRT PP-1096/SRT MD-230/SRT | F16-M-43561-1008 #F16-M-43561-1009 F16-C-10642-8234 #F16-C-10642-8233 F16-C-10642-8235 #F16-C-10642-8236 F16-P-67998-7157 F16-M-42280-3102 |
| 3501-3599 | 1 | 1 | 2 | | ANTENNA COUPLER | CU-372/SRT | F16-C-91733-5588 |
| 3301-3399 3301-3399 3301-3399 3601-3699 | 1 | | | 1 1 1 | ACCESSORIES INSTALLATION KIT INSTALLATION KIT INSTALLATION KIT INSTALLATION KIT INSTALLATION KIT MAIN TEST CABLE ACCESSORIES | MK-230/SRT-14 MK-231/SRT-14A MK-232/SRT-15 MK-233/SRT-15A MK-234/SRT-16 MK-235/SRT-16A | N16-M-384502-0436 #N16-M-384502-0437 N16-M-384502-0438 #N16-M-384502-0439 N16-M-384502-0440 #N16-M-384502-0441 |

NOTE:

- *Indicates available in non-magnetic version with existing nomenclature. Modified to show suffix 'A' e.g.OA-684A/SRT, CY-1572A/SRT for non-magnetic version.
- #Indicates non-magnetic stocknumber.
- The main test cable accessories are part of each installation kit. For clarity and accessibility they are grouped individually.
- ♦Control Indicator C-1352/SRT is part of Radio Frequency Oscillator O-275/SRT.

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|---------------------|---|---|----------------------|
| | F16-T-42951-1008 | <p>TRANSMITTER GROUP, OA-684/SRT: c/o RADIO FREQUENCY AMPLIFIER AM-1008/SRT, RADIO MODULATOR MD-229/SRT, RADIO FREQUENCY OSCILLATOR 0-275/SRT, POWER SUPPLY PP-1094/SRT, POWER SUPPLY PP-1095/SRT, ELECTRICAL EQUIPMENT CABINET CY-1571/SRT, TRANSMITTER COUPLER CU-402/SRT; mtg blocks under the cabinet are expendable, for permanent installation blocks are removed and the transmitter group is mtd on MOUNTING MT-1423/SRT; all components are contained in drawers on roller rails inside the cabinet except for TRANSMITTER COUPLER CU-402/SRT; same as TRANSMITTER GROUP OA-684A/SRT except for cabinet; o/a dimen 26-17/32 in. d, 16-1/8 in. wd, 55-3/8 in. h; p/o AN/SRT-14, 15, 16; w/o spares; CBTL part/dwg NL-982844-2-2</p> | |
| | F16-T-42951-1009 | <p>TRANSMITTER GROUP, OA-684A/SRT: c/o RADIO FREQUENCY AMPLIFIER AM-1008/SRT, RADIO MODULATOR MD-229/SRT, RADIO FREQUENCY OSCILLATOR 0-275/SRT, POWER SUPPLY PP-1094/SRT, POWER SUPPLY PP-1095/SRT, ELECTRICAL EQUIPMENT CABINET CY-1571A/SRT, TRANSMITTER COUPLER CU-402/SRT; mtg blocks under the cabinet are expendable, for permanent installation blocks are removed and the transmitter group is mtd on MOUNTING MT-1423/SRT; all components are contained in drawers on roller rails inside the cabinet except for TRANSMITTER COUPLER CU-402/SRT; this group same as TRANSMITTER GROUP OA-684/SRT except that it has non-magnetic cabinet; o/a dimen 26-17/32 in. d, 16-1/8 in. wd, 55-3/8 in. h; p/o AN/SRT-14A, 15A, 16A; w/o spares; CBTL part/dwg NL-982844-2-3</p> | |
| | F16-M-43561-1008 | <p>MODULATOR-POWER SUPPLY GROUP, OA-685/SRT: 1,000 ohms modulator input impedance at 1,000 cyc; 6,000 ohms modulator output impedance at 1,000 cyc, taps at 8,000 ohms and 10,000 ohms; 320 w modulator power output; ±6 db frequency response from 170 to 4,800 cyc; output supplied from power supply +3,000v DC, 0.340 amp or +2,400v DC, 0.550 amp as selected; AC operating power requirements 220v AC or 440v AC, 60 cyc, three ph (one ph for Radio Modulator); DC operating power requirements -24v DC; nine receptacle type term, 4 jacks, 1 bushing, 2 term strips; mtg blocks under cabinet are expendable, for permanent installation blocks are removed and the units are mtd on MOUNTING MT-1423/SRT; group c/o RADIO MODULATOR MD-230/SRT, POWER SUPPLY PP-1096/SRT, ELECTRICAL EQUIPMENT CABINET CY-1572/SRT, ELECTRICAL EQUIPMENT CABINET CY-1573/SRT; same as MODULATOR-POWER SUPPLY GROUP OA-685A/SRT except for cabinets; all components are contained in drawers on roller rails inside the cabinets; o/a dimen 25-31/32 in. d, 16-1/8 in. wd, 18-1/4 in. h; p/o AN/SRT-15, 16; w/o spares; CBTL part/dwg NL-982845-1-2</p> | |
| | F16-M-43561-1009 | <p>MODULATOR-POWER SUPPLY GROUP, OA-685A/SRT: 1,000 ohms modulator input impedance at 1,000 cyc; 6,000 ohms modulator output impedance at 1,000 cyc, taps at 8,000 ohms and 10,000 ohms; 320 w modulator power output; ±6 db frequency response from 170 to 4,800 cyc; output supplied from power supply +3,000v DC, 0.340 amp or +2,400v DC, 0.550 amp, as selected; AC operating power requirements 220v AC or 440v AC, 60 cyc, three ph (one ph for Radio Modulator); DC operating power requirements -24v DC; nine receptacle type term, 4 jacks, 1 bushing, 2 term strips; mtg blocks under cabinet are</p> | |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---------------------|
| 301-399 | F16-T-98018-8760 | <p>expendable, for permanent installation blocks are removed and the units are mtd on MOUNTING MT-1423/SRT; group c/o RADIO MODULATOR MD-230/SRT, POWER SUPPLY PP-1096/SRT, ELECTRICAL EQUIPMENT CABINET CY-1572A/SRT, ELECTRICAL EQUIPMENT CABINET CY-1573A/SRT; same as MODULATOR-POWER SUPPLY GROUP OA-685/SRT except that it has non-magnetic cabinets; all components are contained in drawers on roller rails inside the cabinets; o/a dimen 25-31/32 in. d, 16-1/8 in. wd, 18-1/4 in. h; p/o AN/SRT-15A, 16A; w/o spares; CBTL part/dwg NL-982845-1-3</p> <p>TUNER, RADIO FREQUENCY, TN-229/SRT: tunes by means of inductive coupling to variable helical transmission line; frequency range .3 mc to 26 mc; two piece drawn aluminum case; grey painted finish; 4 term, connector and cable extrusion type, located at top and bottom; o/a dimen 42 in. lg, 16 in. wd, 13-1/2 in. h; mtd by means of brackets; clamp type shock mtg; pressure tight case, nominal 25 psi; w/o spares; p/o AN/SRT 14, 15, 16; CBTL part/dwg J-2010763</p> | |
| A-301 | N17-M-75228-6690 | MOUNT, RESILIENT: round mtg; 40-60 lb load rating; 3 in. sq. by 1-1/2 in. h o/a; natural rubber cushion, irregular shape; 3/8 in. -16 coarse thd center core; mild steel case; four 0.266 in. diam holes 2-1/2 in. c to c; CAYU part 2060T6; CBTL part/dwg A-2010941-3 | Shock Mount |
| A-302 | | Same as A-301 | Shock Mount |
| A-303 | | Same as A-301 | Shock Mount |
| A-304 | | Same as A-301 | Shock Mount |
| B-301 | N17-M-61750-1806 | MOTOR, ALTERNATING CURRENT: 4 pole, squirrel cage, induction, low inertia control; 115v AC, 60 cyc, 2 ph, 7 w max output, 0.20 amps per phase at max output; locked torque 13.5 oz-in; double end shaft, 1000 rpm w/load, motor can be reversed; totally enclosed; self-cooled; rated ambient temp -55° C to +55° C, temp rise 65° C over 55° C ambient for continuous operation; straight flatted shaft one end, tapered shaft opposite end; 4-1/4 in. lg excluding shaft by 2-5/8 in. wd by 3-3/16 in. h o/a, 0.236 in. diam shaft, shaft extends 9/16 in. on taper end and 1/2 in. on round end; 4 solder lug term; four 0.026 in. diam mtg holes on corners 3-1/4 in. diam at each end; per spec BuShips 16M14RE; CDA type part SS-FPE49-10-1; CBTL part/dwg B2010774; p/o B-304 | Tuning Drive Motor |
| B-302 | For Reference Only | FAN, CENTRIFUGAL: duplex; electric motor operated, non-portable; guarded; 3500 rpm nominal, single ph, 50/60 cps, 115v AC (RMS); o/a dimen 3-11/16 in. h, 6-5/16 in. lg, 4-3/32 in. wd; 46 CFM (duplex) displacement at 3500 rpm; single speed; direct drive; CCW & CW rotation; 1-3/8 in. by 1-11/32 in. outlet (duplex) on bottom; steel, black enamel finish; panel mtg, 4 holes 0.166 in. diam on 2 in. by 1-1/4 in. mtg/c for each flange; dynamically balanced wheel; mfr to withstand extreme temp, shock, & vibration; sealed ball bearings, class H insulation; CCBN Model DRFP, type KD202, Series 110AS-RA2; CBTL part/dwg C-2011027; c/o B-306, 0-319, 0-320 and impeller housing; p/o B-305 | General Ventilation |
| B-303 | N17-E-39071-3797 | ELECTROMAGNETIC ACTUATOR: rotary type moving element; rotary motion produced, approx 3/4 degree arc stroke with 6 lb. in. torque; 120 impulses per sec max; 115v, 60 cyc AC | Z-301 Switch Drive |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---------------------------------|
| B-303 (cont) | | operating voltage, 150 w full load input power, non-polarized, coil ungrounded; 2 flexible wire lead term, 12 in. lg; o/a dimen 3-19/64 in. lg including 1-1/8 in. shaft projection, 2 in. wd, 2 in. h; four no. 8-32 thd mtg holes irregularly spaced as indicated by bosses; operates at 125° C ambient temp; CCDD Model AM-200 per CBTL part/dwg C-2011052; p/o S-308 | |
| B-304 | Assemble from Component Parts | SUB-ASSEMBLY: SPST; 0.20 amp per phase, 115v AC, 2 ph; gibsilo and fine silver contacts; uncased mechanism; o/a dimen 6-1/4 in. lg, 3-3/32 in. h, 2-3/4 in. end; sub-assembly mounts by means of four 0.206 diam mtg holes equally spaced on 3.25 in. B.C.; CBTL part/dwg C-2010875; c/o B-301 and S-307 | Tuning Drive Motor and Governor |
| B-305 | N17-B-21188-8824 | FAN, CENTRIFUGAL: two impellers on shaft; direct drive; straight carbon steel blades; CW and CCW; welded housing, black enamel; flanged discharge outlet; electric motor, 115v AC, 50/60 cyc, 1 ph, 3500 rpm, guarded enclosure, ball bearings; o/a dimen 7 in. lg, 3-11/16 in. h, 4-1/32 in. wd; panel mtd, 8 holes 0.166 in. diam on 2 in. by 1-1/4 in. mtg/c for each flange; motor w/centrifugal switch; nonsparking; CBTL part/dwg D-2010882; c/o B-302 and S-306 | Blower w/Protective Switch |
| B-306 | For Reference Only | MOTOR, ALTERNATING CURRENT: capacitor run induction motor; 115v AC, 50/60 cps, single ph, 18 w full load; 3500 rpm nominal; single take-off, reversible in rotation; closed frame; ambient temp range -28° C to +120° C for continuous operation; shaft flatted at both ends; o/a dimen 2-7/16 in. lg excluding shaft, 2-1/2 in. h, 2-3/4 in. wd; 0.2496 in. diam shaft extends 1-1/16 in. from both sides of frame; 4 flexible wire lead term; 4 mtg holes equally spaced no. 8-32 NC-2 tapped 1/4 in. d on 1.25 in. B.C. (at both ends); CCBN Series 110AS-RA2; p/o B-302 | Blower Motor |
| C-301 | N16-C-99999-1170 | CAPACITOR, FIXED, PAPER DIELECTRIC: 1 section; case style no. 18 MBCA Ref Dwg Group 1; 470,000 mmf; -15 +25% tolerance; 600v DCW; designed to operate between -65° C to +125° C; hermetically sealed cylindrical metal case, 2-1/8 in. lg, 3/4 in. diam o/a dimen excluding term; 2 glass to metal seal term located in center at each end; Astron X-250 impregnation; no internal ground connections; 2 wire leads, AWG no. 20 extending 2-5/8 in. from each end of body; designed specifically for operation up to and incl 125° C without derating; CBWO type AQF-6-47; CBTL part/dwg A-2011168 | S-307 Governor Filtering |
| E-301 | N17-T-28253-3576 | INSULATOR, STANDOFF: molded, asbestos filled, melamine; 14,000v DC breakdown voltage; bifurcated type with no. 4-40 thd brass, cad pl stud mtd in center of hex base stud, extends 7/32 in. below base; o/a dimen 5/8 in. h excluding mtg stud by 1/4 in. wd at base and 3/16 in. wd at top; mtg hardware c/o 1 brass, cad pl hex nut 1/4 in. wd with no. 4-40 thd; CCKK type 755 | Tie Point |
| E-302 | N17-C-81587-8340 | CONTACT, ELECTRICAL: contact includes conduction point, 1 point, solid rivet, silver, dimen 0.245 in. diam, 0.187 in. h; phosphor bronze, silver pl finish; o/a dimen 0.906 in. lg, 0.375 in. OD; contact inserted and soft soldered on 1 end, other end slotted (6 slots); spring mtd; CBTL part/dwg A-2011100; p/o S-308 | Contact, p/o S-308 |
| E-303 | | Same as E-302, p/o S-308 | Contact, p/o S-308 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|------------------------------|
| E-304 | | Same as E-302, p/o S-308 | Contact, p/o S-308 |
| E-305 | | Same as E-302, p/o S-308 | Contact, p/o S-308 |
| E-306 | Low Failure Item | ADAPTER, cable: single hole mtg type; for use with RG-87A/U cable; o/a lg 1-5/32 in.; one mtg hole 1/2 in. diam; type coax cable termination; CARO part 1075 modified; CBTL part/dwg A-2011108; p/o S-308 | Coax Cable Terminal |
| E-307 | Low Failure Item | ADAPTER, cable: single hole mtg type; for use with RG-87A/V cable; o/a lg 1-9/32 in.; one mtg hole 1/2 in. diam; type coax cable termination; CARO part 1075; p/o S-308 | Coax Cable Terminal |
| E-308 | | Same as E-306; p/o S-308 | Coax Cable Terminal |
| E-309 | N17-C-83630-4623 | CONTACT, ELECTRICAL: contact includes 2 points, Bi-Metal Contact Tape, 0.094 in. lg, 1/32 in. h, 1/32 in. d; spring L shaped w/Z side bend; o/a dimen 1-3/16 in. lg, 15/16 in. wd, 3/16 in. d; 1 solder lug type term located at opposite end from points; contact surface 0.806 in. from center of first mtg hole; two 5/64 in. diam mtg holes spaced 5/16 in. c to c; CFT part/dwg GA-4119-2A; p/o S-306 | Contact, p/o S-306 |
| E-310 | N17-C-80720-5402 | CONTACT, ELECTRICAL: contact includes 4 points, 2 on each side, Bi-Metal Contact Tape, 0.094 in. lg, 1/32 in. h, 1/32 in. d; spring T shaped with 3/64 in. pre-tension 65 to 75 grams; o/a dimen 1-9/16 in. lg, 5/8 in. wd, 1/8 in. d; contact surface 1.234 in. from center of first mtg hole; two 5/64 in. diam mtg holes spaced 5/16 in. c to c; CFT part/dwg GA-4118-2B; p/o S-306 | Contact, p/o S-306 |
| E-311 | N17-C-81232-1743 | CONTACT, ELECTRICAL: contact includes 2 points, Bi-Metal Contact Tape, 0.094 in. lg, 1/32 in. h, 1/32 in. d; spring L shaped; o/a dimen 1-1/4 in. lg, 15/16 in. wd, 1/32 in. thk; 1 solder lug type term, tin dipped, located at opposite end from points; contact surface 0.806 in. from center of first mtg hole; two 5/64 in. diam mtg holes spaced 5/16 in. c to c; CFT part/dwg GA-4120-2A; p/o S-306 | Contact, p/o S-306 |
| E-312 | N17-C-80971-4389 | CONTACT ASSEMBLY, ELECTRICAL: assembles with E-314 and E-318 to make shorting sleeve for main tuning coil; c/o 15 spring fingers w/15 contacts; o/a dimen 14-3/16 in. lg by 1 in. wd by 9/64 in. h approx; spring fingers silver pl beryllium copper, angled 10°; 15 Wilco no. 19 alloy contacts located on fingers spaced 1 in. c to c; seven 1/4 in. by 1/8 in. slots equally spaced for screw mtg to outer rim of E-314; CBTL part/dwg B-2010655 | Contact, p/o Shorting Sleeve |
| E-313 | Shop Manufacture | CONTACT, ELECTRICAL: laminated silver and beryllium copper; spring leaf type; irregular shape; 1-7/16 in. lg, 7/8 in. h, 1/2 in. wd, 0.010 in. thk o/a dimen; 2 mtg holes 0.250 in. diam spaced 0.500 in. c to c; CBTL part/dwg A-2010712 | L-302 Sliding Contact |
| E-314 | N17-C-84685-8153 | RING, ELECTRICAL CONTACT: assembles with E-312 and E-318 to make shorting sleeve for main tuning coil; material brass and aluminum, contacts silver & copper; o/a dimen 9-3/4 in. OD by 2-9/32 in. wd by 5-5/8 in. ID; shoes spaced equally 60° apart and mtd to E-315; fits over main coil and mts to gear racks; CBTL part/dwg C-2010766; c/o E-315 and 6 shoes | p/o Shorting Sleeve |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--|
| E-315 | N17-C-85902-5376 | CONTACT SET: collector ring; makes contact w/main coil; ring brass & aluminum, contacts silver & copper; c/o ring, 32 finger strip, 32 contact strip; o/a dimen 9-3/4 in. OD by 1.250 in. wd by 5-5/8 in. ID; ring, finger strip, and contact strip spot welded together; CBTL part/dwg C-2011199; p/o E-314 | Contact for L-302 |
| E-316 | Shop Manufacture | CONTACT, ELECTRICAL: u/w L-302; laminated silver and beryllium copper; spring leaf type; irregular shaped; 1-7/16 in. lg, 7/8 in. h, 1/2 in. wd, 0.010 in. thk o/a dimen; 2 mtg holes 0.250 in. diam spaced 0.500 in. c to c; CBTL part/dwg A-2011191 | L-302 Sliding Contact |
| E-317 | N17-T-24601-1453 | CHAMBER, CABLE TERMINAL: single hole, straight type; o/a dimen 2-7/16 in. lg by 1-5/8 in. across flats incl hex coupling nut; cylindrical w/hex flange 1-1/2 in. across flats; steel, 1 in. -11-1/2 N.P. thd at both ends; tapered silicone rubber bushing insert; 0.875 in. diam max cable opening; watertight; CCH type CGB397; CBTL part/dwg B-2010834 | Cable Terminal for W-301 |
| E-318 | | Same as E-312 | Contact, p/o Shorting Sleeve |
| H-301 | Low Failure Item | GLAND: silicone rubber; OD 24 degree taper, 3/4 in. OD at large end, 1/2 in. diam at smaller end, 5/8 in. wd, 3/16 in. ID; CBTL part/dwg A-2010840 | p/o J-303 |
| H-302 | Low Failure Item | WRENCH: c/o 1/4 in. hex stem, cup 13/16 in. OD and two 1/2 in. lg by 0.625 in. diam pins; cold rolled steel, nickel pl; 7/8 in. lg by 13/16 in. diam, o/a dimen; 0.750 diam by 90° countersunk opening in cup; 1/8 in. diam hole thru cup 7/32 in. from stem end; CBTL part/dwg A-2011489 | Special Wrench for Contact Button Assy |
| I-301 | N17-G-99999-0329 | GAUGE, PRESSURE, DIAL INDICATING: dial and pointer type; 0 to 30 psi; single reading; 1-1/2 in. dial size; black pointer; brass case, black enamel finish, 1-5/8 in. OD by 1-17/32 in. lg o/a; equipment mtd; 5/8 in. lg pipe with 1/8 in. pipe thd 3/8 in. lg; CBTL part/dwg A2010896 | Gas Pressure Indicator |
| J-301 | N17-C-99999-1184 | CONNECTOR, RECEPTACLE, ELECTRICAL: 6 size 12 contacts, 24 size 16 contacts, male, round; polarized; 3 in. sq by 1-15/64 in. lg, o/a dimen; size 12 contacts rated at 35 amp, size 16 contacts 20 amp, 200v DC, 150v AC (RMS); box mtg receptacle, straight type, cylindrical, steel, grey enamel-cad pl finish; vitreous insulator inserts fused to pins and shells; 2 in. -18 thd; 4 mtg holes 9/32 in. diam spaced 2.375 in. c to c, panel mtg, hermetically sealed; c/o CED type GS02-32-8P-001 with CBTL flange soldered to it; CBTL part/dwg A-2010843 | Control Cable Connector |
| J-302 | N17-C-99999-1185 | CONNECTOR, RECEPTACLE, ELECTRICAL: 24 size 16 contacts, male, round; polarized; 2-1/2 in. sq by 1-15/64 in. lg o/a dimen; contacts rated 22 amp, 70v DC, 50v AC (RMS); box mtg receptacle, straight type, cylindrical, steel, grey enamel-cad pl finish; vitreous insulator inserts fused to pins & shell; 1-1/2 in. -18 thd; 4 mtg holes 9/32 in. diam spaced 1.875 in. c to c; panel mtg, hermetically sealed; c/o CED type GS02-24-28P-001 with CBTL flange soldered to it; CBTL part/dwg A-2010844 | Control Cable Connector |
| J-303 | N17-C-99999-1178 | CONNECTOR, RECEPTACLE, ELECTRICAL: single contact, female, round at each end; straight type; o/a dimen 2 in. sq by 4-1/16 in. lg; 500v peak rating; RF connector, 52 ohms | R. F. Input |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--|
| J-303 | | nominal impedance, non-constant frequency impedance characteristic; cylindrical shape w/sq mtg flange, brass, cad pl; c/o P-302 and J-304 electrically connected to each other w/ brass pin insert, H-301 and coupling nut; synthetic resin dielectric insert; 4 mtg holes 0.257 in. diam w/1.437 in. mtg/c; brass hex coupling nut 1-1/2 in. across flats; 1-1/4 in. -18 thd at J-304 and, 5/8 in. -24 thd at P-302 end; weatherproof; CBTL part/dwg B-2010916 | |
| J-304 | N17-C-99999-1186 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female, round at each end; straight type; 2-1/2 in. lg by 2 in. sq, o/a dimen; 5 kilovolts peak rating; RF connector, 50 ohm nominal impedance, non-constant frequency impedance characteristics; cylindrical shape w/sq mtg flange; brass, cad pl, silver pl inner conductor; 4 mtg holes 0.257 in. diam spaced 1.437 in. c to c; 1-1/4 in. -18 thd at both ends; panel mtg; weatherproof; type UG-287/U except for pl; CBTL part/dwg B-2010849; p/o J-303 | p/o J-303 |
| J-305 | N17-C-99999-1195 | CONNECTOR, FEMALE CONTACT: spring sleeve type contacts, phosphor bronze; straight type; 1-1/8 in. lg excluding screw and flat washer, 3/8 in. OD, o/a dimen; round body, nickel pl finish; no. 10-32 thd screw mtg; CEJ type 106-72 | Termination |
| L-301 | Shop Manufacture | COIL, RADIO FREQUENCY: 1 turn, 0.144 diam stock, copper conductor, silver clad, 1 winding, single layer wound, unshielded, 7.250 in. ID, 7.538 in. OD; 2 solder lug type term, 2 mtg contacts; CBTL part/dwg D2010915 | L-302 Coupling Coil |
| L-302 | N16-C-76678-9991 | COIL, RADIO FREQUENCY: 141.875 turns of 0.064 diam copper wire, silver clad; wound on silicone bonded fiberglass coil form; 20-5/16 in. lg, 5.625 in. diam o/a; six 0.228 mtg holes counterbored 15/32 in. diam by 1/8 in. d, equally spaced 60° apart on 5.625 in. B.C.; CBTL part/dwg D-2010768 | Main Tuning Coil |
| L-303 | For Reference Only | ELECTROMAGNET: 24v DC; 3.3 amps max current rating; cold rolled steel material of core; 900 turns of wire in coil, 15.7 ohms DC resistance; o/a dimen 1-7/8 in. diam by 0.936 in. lg excluding mtg studs; two no. 8-32 thd mtg studs w/hex nuts located in back 180° apart and extending 5/8 in. from case; two no. 27 flexible wire, high temperature leads (120°C) extending 10 in. from case; CBTL part/dwg A-2010642; p/o O-301 | Clutch-Brake Coil |
| O-301 | N17-C-53332-6980 | CLUTCH, MAGNETIC: single friction face type; 24v DC; 3.3 amps max; 1000 rpm max speed; 2-5/8 in. OD by 7-3/4 in. lg o/a; mtd by two no. 8-32 thd studs 1.250 in. c to c; adjustable nut setting determines air gap; when L-303 in energized drive is disengaged; CBTL part/dwg C2010630; c/o L-303, O-302 thru O-308, adjustable nut, brake plate and shaft assembly | For Accurate Positioning of Main Coil Sliding Contacts |
| O-302 | For Reference Only | SPRING: helical compression type; 0.035 diam spring steel wire, cad pl; 1-1/2 in. lg by 0.304 in. OD; 12 turns; RH turns; squared ends; CBTL part/dwg A2010639; p/o O-301 | For Magnetic Clutch Shaft |
| O-303 | G77-B-991-15023-0000 | BEARING, ball: single row radial; unshielded; light duty; 0.1875 in. bore, 0.5632 in. OD, 0.217 in. wd; 6 balls; grease packed; ABEC-1 std tol; flanged; CCAE part F3; p/o O-301 | For Magnetic Clutch Shaft |
| O-304 | Low Failure Item | WORM, gear: hardened steel, polished; helical teeth; RH; 5 teeth; 32 pitch single thd, 0.438 in. pitch diam; 0.1875 in. bore with 0.500 in. straight face, 2-5/16 in. o/a lg; 14-1/2° pressure angle; c/o CHH no. HLTH gear and CBTL tubing assembly; bled; CBTL part/dwg A2010640; p/o O-301 | p/o Magnetic Clutch Shaft |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--|
| O-305 | | Same as O-303, p/o O-301 | p/o Magnetic Clutch |
| O-306 | G77-B-115-01209-0000 | BEARING, ball: single row radial; unshielded; light duty; 0.750 in. bore, 0.6250 in. OD, 0.3125 in. wd; 8 balls; grease packed; ABEC-1 std tol; non-filling slot type; CCAE part S8K; p/o O-301 | p/o Magnetic Clutch |
| O-307 | G77-B-111-00810-0000 | BEARING, ball: single row radial; unshielded; extra small type; 0.3150 in. bore, 0.8661 in. OD, 0.2756 in. wd; 7 balls; grease packed; not American Standards Association size; non-filling slot type; CBAM part 38; p/o O-301 | p/o Magnetic Clutch |
| O-308 | Low Failure Item | GEAR, helical: hardened steel, polished; helical teeth; RH; 8 teeth; 16 diametrical pitch, 0.500 in. pitch diam; 0.635 in. OD, 0.250 in. bore, 0.500 in. wd; straight face; 14-1/2° normal pressure angle; 3/32 in. by 1/16 in. keyway; CBH part H1608R; p/o O-301 | p/o Magnetic Clutch |
| O-309 | Low Failure Item | VALVE, air: charge valve for nitrogen; brass, nickel pl; incl 1/2 in. lg dome cap; 1-5/16 in. lg less cap by 7/16 in. hex flange; 1/8 in. I. P. thd at one end; CCDC part 1468 A8 | Gas Intake |
| O-310 | Low Failure Item | SPRING: helical compression type; contact spring; .0254 in. diam beryllium copper wire, silver pl; 0.906 in. lg by 0.170 in. OD; 17 turns; RH turns; square ends; CBTL part/dwg A2010781; p/o S-308 | u/w E-302 |
| O-311 | | Same as O-310, p/o S-308 | u/w E-303 |
| O-312 | | Same as O-310, p/o S-308 | u/w E-304 |
| O-313 | | Same as O-310, p/o S-308 | u/w E-305 |
| O-314 | | Same as O-303, p/o S-308 | Shaft Bearing for S-308 |
| O-315 | N17-B-99999-0035 | BAR, ACTUATOR, ELECTRICAL SWITCH: stainless steel; irregular shape, w/oil impregnated bronze roller, 3/16 in. diam; o/a dimen, 1-3/32 in. lg, 0.915 in. h, 11/32 in. wd excluding mtg screws; two 0.130 in. diam mtg holes located 0.96 in. c to c; side mtg, winterized, used with micro switch V3-1; w/two no. 4-40 by 5/8 in. round head machine screws, two no. 4-40 std hex nuts, two lockwashers; p/o S-308; CMU type JV-5 | Actuator for S-301 |
| O-316 | | Same as O-315, p/o S-308 | Actuator for S-302 |
| O-317 | Low Failure Item | SPRING: helical extension type; for weight plates of S-306; 0.018 in. diam tinned music wire; 0.120 in. diam less end hooks, 0.695 in. lg; approx 16 turns; RH; parallel hook term; CBTL part/dwg A2011241 | Spring for Weight Plates of Centrifugal Assembly |
| O-318 | Low Failure Item | BALL, positioning: nylon; 1/4 in. round; one 0.635 in. diam hole thru center; used for positioning of contact in centrifugal switch S-306; CBTL part/dwg A2010894 | For Centrifugal Assy Contact Position |
| O-319 | Low Failure Item | IMPELLER, centrifugal: multiblade; forward curve vanes; steel, cad pl plus iridite; CW motion; o/a dimen 2 in. diam by 31/32 in. wd; single inside hub, 1/4 in. bore; mtd by two no. 8-32 thd by 1/8 in. lg Allen head cup point set screws; CCBN part no. 2402-04, dwg no. MC-10270; p/o B-302 | p/o B-302 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|---------------------------------------|
| O-320 | Low Failure Item | IMPELLER, centrifugal: multiblade; forward curve vanes; steel, cad pl plus iridite; CCW motion; o/a dimen 2 in. diam by 31/32 in. wd; single inside hub, 1/4 in. bore; mtd by two no. 8-32 thd by 1/8 in. lg Allen head cup point set screws; CCBN part no. 2402-05, dwg no. MC-10271; p/o B-302 | p/o B-302 |
| O-321 | Low Failure Item | GEAR: rack for spur gear; steel, nickel pl; drive for coil; spur teeth; 20 pitch; 21-1/8 in. lg by 3/8 in. wd by 3/8 in. h o/a; straight face; no. 10-32 thd 9/16 in. lg at one end; 45° and 30° chamfer at approx 16 in. lg; 14-1/2 degree pressure angle; CBH part L-509 modified; CBTL part/dwg B2010685 | Drive for Main Coil Shorting Contacts |
| O-322 | Low Failure Item | GEAR: rack for spur gear; steel, nickel pl; drive for coil; spur teeth; 20 pitch; 21-1/8 in. lg by 3/8 in. wd by 3/8 in. h o/a; straight face; no. 10-32 in. thd 9/16 in. lg at one end; 30° chamfer at opposite end of thd; 14-1/2 degrees pressure angle; CBH part L-509 modified; CBTL part/dwg B2010686 | Drive for Main Coil Shorting Contacts |
| O-323 | | Same as O-308 | Drives Magnetic Clutch |
| O-324 | | Same as O-307 | For Main Drive Shaft |
| O-325 | | Same as O-307 | For Main Drive Shaft |
| O-326 | | Same as O-307 | For Drive Motor Extension Shaft |
| O-327 | | Same as O-306 | For Drive Motor Extension Shaft |
| O-328 | | Same as O-315 | Actuator for S-303 |
| O-329 | | Same as O-315 | Actuator for S-304 |
| O-330 | G77-B-111-00602-0000 | BEARING, ball: single row radial; unshielded; extra small type; 0.2362 in. bore, 0.7480 in. OD, 0.2362 in. wd; 6 balls; grease packed; not American Standard Association size; non-filling slot type; CBAM part 36 | For Main Drive Shaft |
| O-331 | | Same as O-330 | For Main Drive Shaft |
| O-332 | | Same as O-330 | For Main Drive Shaft |
| O-333 | | Same as O-330 | For Main Drive Shaft |
| O-334 | | Same as O-330 | For Main Drive Shaft |
| O-335 | | Same as O-330 | For Main Drive Shaft |
| O-336 | | Same as O-330 | For Main Drive Shaft |
| O-337 | | Same as O-330 | For Main Drive Shaft |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---|
| O-338 | Low Failure Item | GEAR: spur; steel; straight teeth; 24 teeth; 20 pitch, 1.200 in. pitch diam; 0.748 in. bore, 1/4 in. face, 3/4 in. wd; straight face; hub 1/2 in. wd by 1-1/16 in. diam; 14-1/2° pressure angle; CBH part NA24 modified; CBTL part/dwg A2010656 | Drives Rack |
| O-339 | | Same as O-338 | Drives Rack |
| O-340 | Low Failure Item | GEAR: spur; steel; straight teeth; 18 teeth; 20 pitch, 0.900 pitch diam; 0.312 in. bore, 5/16 in. face, 3/4 in. wd; straight face; hub 3/8 in. wd by 3/4 in. diam; no. 6-32 in. tapped hole in hub; 14-1/2° pressure angle; CBH part NA18B modified with CBTL bushing; CBTL part/dwg A2010651 | Drives O-339 |
| O-341 | | Same as O-340 | Drives O-338 |
| O-342 | Low Failure Item | WORM, gear: soft steel; helical teeth; RH; 5 teeth; 32 pitch four thd; 0.438 in. pitch diam, 0.316 in. bore, 0.687 in. face and wd; straight face; 0.070 in. d by 0.063 in. wd keyway across end; 25° pressure angle; CBH part QTH modified; CBTL part/dwg A2010644 | Drives Worm Gear of Variable Resistor |
| O-343 | Low Failure Item | GEAR: worm; bronze; RH; 100 teeth; 32 pitch single thd 3.125 in. pitch diam; 0.375 in. bore, 7/32 in. face, 17/32 in. wd o/a; concave face; hub 11/16 in. diam by 5/16 in. wd; one no. 6-32 tapped hole and one 0.055 in. hole 90° apart on hub; 14-1/2° pressure angle; CBH part G1033 modified; CBTL part/dwg A2010723 | Meshes w/Worm Gear of Magnetic Clutch |
| O-344 | Low Failure Item | GEAR: worm; bronze; RH; 40 teeth; 32 pitch four thd, 1.250 in. pitch diam; 0.250 in. bore, 7/32 in. face, 17/32 in. wd o/a; concave face; hub 5/8 in. diam by 5/16 in. wd; two no. 6-32 tapped holes spaced 90° apart on hub; 25° pressure angle; CBH part Q1328 modified; CBTL part/dwg A2010731 | Gear on Variable Resistor Shaft |
| O-345 | N17-P-99999-0134 | PACKING, PREFORMED: neoprene; 2-5/8 in. OD, 2-1/4 in. ID, 3/16 in. thk; black; MIL type AN-6227B-34 | Gasket for J-301 |
| O-346 | N17-P-99999-0138 | PACKING, PREFORMED: neoprene; 2-1/8 in. OD, 1-3/4 in. ID, 3/16 in. thk; black; MIL type AN-6227B-30 | Gasket for J-302 |
| O-347 | N17-P-99999-0137 | PACKING, PREFORMED: neoprene; 1-1/2 in. OD, 1-1/4 in. ID, 1/8 in. thk; black; MIL type AN-6227B-23 | Gasket for J-303 |
| O-348 | For Replacement Use N17-G-165093-821 | PACKING, PREFORMED: neoprene; 11 in. OD, 10-1/2 in. ID, 1/4 in. thk; black; MIL type AN-6227B-77 | Gasket between Coil Assy and Center Ring |
| O-349 | | Same as O-348 | Gasket between Drive Assy and Center Ring |
| O-350 | N17-P-99999-0135 | PACKING, PREFORMED: neoprene; 8-1/2 in. OD, 8 in. ID, 1/4 in. thk; black; MIL type AN-6227B-72 | Gasket for Drive End |
| O-351 | N33-P-1561-920 | PACKING, PREFORMED: neoprene; 7-1/4 in. OD, 6-3/4 in. ID, 1/4 in. thk; black; MIL type AN-6227B-67 | Gasket for Coil End |
| O-352 | N17-P-99999-0136 | PACKING, PREFORMED: neoprene; 3/8 in. OD, 1/4 in. ID, 1/16 in. thk; black; MIL type AN-6227B-5 | Gasket for Cap of Cable Extrusion |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--------------------------------------|
| O-353 | Low Failure Item | VALVE, relief: brass, beryllium copper, cad pl; 30 ± 5 psi working pressure; 1/8 in. male pipe thd on valve seat; gas service; straight type; plunger check valve; spring loaded; o/a dimen 2-17/32 in. lg by 7/8 in. across hex flats; CCDA type 5431 | Relief Valve |
| O-354 | | Same as O-352 | Gasket for Collar of Cable Extrusion |
| P-301 | N17-C-71416-2550 | CONNECTOR, PLUG, ELECTRICAL: 1 contact, male, round; straight type coax cable connector; 1-13/16 in. lg, 13/16 in. diam o/a dimen; RF connector, 50 ohms nominal impedance; non-constant frequency impedance characteristic; cylindrical shape, brass, silver pl; molded teflon insert; 13/16 in. OD of coupling nut, 5/8 in. -24 thd; weatherproof; per spec Mil-C-71A; MIL type UG-21B/U; p/o S-308 | Mates w/J-303 |
| P-302 | For Replacement Use N17-C-67729-2433 | CONNECTOR, PLUG, ELECTRICAL: single contact, female, round at each end; straight type; o/a dimen 1-9/16 in. lg, 1.175 in. OD; 500 v peak rating; RF connector, 52 ohms nominal impedance; non-constant frequency impedance characteristic; cylindrical shape, brass, cad pl; synthetic resin dielectric insert; 5/8 in. -24 thd on one end only; weatherproof; JAN type UG-271/U modified; CBTL part/dwg A-2010846; p/o J-303 | p/o J-303 |
| R-301 | For Replacement Use N16-R-87679-5180 | RESISTOR, VARIABLE: composition element; 1 section, 10,000 ohms, ± 10% tolerance; 2 w; 3 solder lug type term; metal case, enclosed, 1-3/32 in. diam, 21/32 in. d o/a dimen excluding term; metal shaft round, 1/4 in. diam, 1 in. lg, normal torque; mtd by bushing 3/8 in. -32 NEF-2 thd; per spec JAN-R-94; JAN type RV4ATRE103A | Provides Position Information |
| R-302 | N16-R-99999-0854 | RESISTOR, FIXED, WIRE-WOUND: non-inductive winding; 300 ohms, ± 5% tolerance; 25 w power dissipation, 200° C max continuous operating temp; body dimen excluding mtg and term, 1-1/16 in. lg, 1-1/16 in. wd, 9/16 in. h; silicone coating, resistant to moisture and salt spray; 2 wire lead type term, 7/16 in. lg; 2 mtg flanges with 1/8 in. diam holes at diagonally opposite ends of body, on 23/32 in. by 25/32 in. centers; die-cast black anodized radiator finned housing; CBZX type RH-25; CBTL part/dwg A2011169-2 | Governor Filtering |
| S-301 | For Replacement Use N17-S-69192-8601 | SWITCH, SENSITIVE: SPDT; 30v DC, 125 or 250v AC, 10 amp, phenolic body; 1-3/8 in. lg including term, 13/32 in. wd, 7/8 in. h excluding term screw, o/a dimen excluding actuator; snap-action plunger type actuating mechanism; beryllium copper spring w/silver contacts; 0.016 in. max differential movement, 3/64 in. max pre-travel, 1/32 in. min over-travel; 6 to 14 oz operating force; 1 contact normally open, 1 contact normally closed; three no. 4-40 round head machine screw type term w/lock washers; one 0.130 in. diam mtg hole & one 0.120 in. diam mtg hole diagonally mtd on 0.96 in. centers; winterized unit; u/w JV-5 actuator; p/o S-308; per spec MIL-S-6743; CMU type V3-1 | S-308 Positioning Cam Switch |
| S-302 | | Same as S-301, p/o S-308 | S-308 Positioning Cam Switch |
| S-303 | | Same as S-301 | Top Limit Switch |
| S-304 | | Same as S-301 | Bottom Limit Switch |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---|
| S-305 | N17-S-70023-6851 | SWITCH, THERMOSTATIC: SPDT; stainless steel case; 2-9/16 in. diam, 13/16 in. h, o/a dimen; operating temp, range 95° C to 110° C; 120v AC, 12 amp; 3 screw type term located on top; mtd by flange w/four 5/32 in. diam mtg holes spaced equally on 2-3/16 in. diam; thermo snap control; CSQ type C4370-13 | 500 w Operation Interlock Protection |
| S-306 | For Reference Only | SWITCH, CENTRIFUGAL: represents the switch section of B-305; c/o centrifugal assembly, O-318, SPDT switch including E-309, E-310 and E-311; approx 1-5/8 in. lg, 3-1/4 in. h o/a; three 0.166 in. mtg holes counterbored 11/32 in. diam by 3/32 in. d on a 2.875 in. B. C. | 500 w Operation Interlock Protection |
| S-307 | Low Failure Item | SWITCH, CENTRIFUGAL, ELECTRICAL: SPST; gibsiloy and fine silver; 115v, 0.20 amp per phase, 2 ph, AC; principal parts consist of left and right rotor contacts, rotor plate; approx 1-1/2 in. diam by 7/8 in. wd o/a; 2 solder lug type terminals, located on front of switch; three 0.166 in. diam mtg holes equally spaced on 2.062 in. diam B. C.; CBTL part/dwg B2010874; p/o B-304 | To Reduce Scanning Speed |
| S-308 | Assemble from Component Parts | SWITCH SECTION ASSEMBLY, ROTARY: 4-3/8 in. lg, 4-5/8 in. wd, 5-1/16 in. h less cable term; four 0.312 mtg holes spaced 2-1/2 in. by 1-1/16 in. c to c; CBTL part/dwg D2011090; c/o B-303, S-301, S-302, E-302 thru E-305, O-310 thru O-316 and TB-303 | Z-301 Switch |
| TB-301 | For Replacement Use N17-B-78038-4127 | TERMINAL BOARD: molded melamine; 14 double screw type term; barrier type; 5-7/8 in. lg, 7/8 in. wd, 13/32 in. h o/a; four 0.160 in. diam mtg holes two on each end, 5-5/8 in. c to c on lg, 5/16 in. c to c on wd; spade type; CJC part 14-140-W-A | For Drive Assy |
| TB-302 | | Same as TB-301 | For Drive Assy |
| TB-303 | For Replacement Use N17-B-77636-3916 | TERMINAL BOARD: molded phenolic compound; includes 4 double screw type term; barrier type; o/a dimen 2-1/8 in. lg, 7/8 in. wd, 13/32 in. h; four 0.160 in. diam mtg holes, two on each end, 1-7/8 in. c to c on lg by 5/16 in. c to c on wd; term & screws brass, nickel pl; CJC type 4-140-A; p/o S-308 | p/o S-308 |
| W-301 | For Replacement Use N15-C-12200-775 | CABLE, RADIO FREQUENCY: 52 ohms nominal impedance, 29.5 mmf nominal capacitance per ft, 14000v (RMS) max voltage rating; single, solid inner conductor, copper, 0.250 in. diam; polyethylene dielectric; no outer jacket or wire braid; 29/32 in. diam, 9 in. lg o/a dimen; MIL type RG-19/U (modified); CBTL part/dwg A-2010836 | R. F. Output |
| Z-301 | N17-T-99999-0426 | TRANSFORMER, IMPEDANCE: single winding; 7 turns; tapped at 6 turns; wound with 0.0125 in. thk soft copper strip; silver pl; tempered per FED SPEC. QQ-C-501a; turns insulated by fiberglass tape; w/o adjustable taps; 3-3/8 in. diam, 1-5/8 in. h incl term; toroidal core; core wound of 0.001 in. thk Allegheny Mumetal, hydrogen annealed after winding; clamp mtd; three wire lead type term w/term lug 0.3 mc to 2 mc; CBTL part/dwg B-2011212 | Impedance Trans- former |
| 401-499 | F16-C-89543-8001 | CONTROL-INDICATOR, C-1352/SRT: provides remote and manual control of ANTENNA COUPLER CU-372/SRT and RADIO FREQUENCY TUNER TN-229/SRT; positioning meter MIL type MR26W100DCUAR, SWR meter CV model 1521 class 52; AC operating power requirements 110v, 60 cyc, single ph, DC operating power requirements 250v regulated and -24v; drawn | |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|-------------------|---|---|----------------------------------|
| 401-499 (cont) | | aluminum case, enamel finish; o/a dimen 9-1/2 in. lg, 7-1/2 in. wd, 3 in. d; four 5/16 in. diam mtg holes, top 2 holes spaced 4 in. c to c in. lg, bottom 2 holes spaced 8.750 in. c to c in. lg, top and bottom holes spaced 5.218 in. c to c in h; CBTL part/dwg J-2011017; p/o RADIO FREQUENCY OSCILLATOR O-275/SRT | |
| C-401 | N16-C-99999-1174 | CAPACITOR, FIXED, PAPER DIELECTRIC: 1 section; similar to case style no. 34, MBCA Ref Dwg Group 1; 1.0 mf, -10% +20% tolerance; 330v AC; hermetically sealed metal case insulated; 1-13/16 in. wd, 1-1/16 in. d, 2-1/4 in. h, excluding term; 2 solder lug type term, 5/8 in. h, on top, 13/16 in. c to c; castor oil impregnated; castor oil filled; no internal ground connections; 2 single hole mtg brackets, spaced 2-1/4 in. c to c, CAW type RY-09-MS-330-1.0 MFD; CBTL part/dwg A-2011083 | Blower Motor Phase Shift |
| C-402 | N16-C-99999-1172 | CAPACITOR, FIXED, PAPER DIELECTRIC: 1 section; case style no. 34, MBCA Ref Dwg Group 1; 6.0 mf, -2-1/2% +10% tolerance; 330v AC; hermetically sealed metal case, insulated; 2-1/2 in. wd, 1-3/16 in. d, 4-1/4 in. h, excluding term; 2 screw thread type term, 13/16 in. h on top, 1-1/8 in. c to c; Pyranol impregnated; Pyranol filled; no internal ground connections; 2 single hole mtg brackets, spaced 3 in. c to c; CG type 23F439G102; CBTL part/dwg A-2011084 | Drive Motor Phase Shift |
| E-401 | Low Failure Item | INSULATOR, STANDOFF: molded, asbestos filled, melamine; 14,000v DC breakdown voltage; bifurcated type, not in MBCA Ref Dwg Group 9; 9/16 in. h by 1/4 in. across flats of hex base, o/a dimen; mtd by means of no. 4-40 thd brass, cad pl insert w/4-40 thd brass, cad pl machine screw; CCK type 756 | Mounts Resistor |
| E-402 | Low Failure Item | INSULATOR, STANDOFF: molded, asbestos filled, melamine; 24,000v DC breakdown voltage; bifurcated type, not in MBCA Ref Dwg Group 9; 27/32 in. h by 1/4 in. across flats of hex base, o/a dimen; mtd by means of no. 4-40 thd brass, cad pl insert; CCK type 750 | Mounts Resistor |
| E-403 | | Same as E-401 | Mounts Resistor |
| E-404 | | Same as E-401 | Mounts Resistor |
| E-405 | | Same as E-401 | Mounts Resistor |
| E-406 | | Same as E-401 | Mounts Resistor |
| E-407 | For Replacement Use N16-K-700346-101 | KNOB: set screw type; fluted; positive gripping surface; phenolic; o/a dimen 1-1/2 in. OD by 7/8 in. thk; designed to accommodate round unthreaded shaft 1/4 in. diam, mgt hole 0.251 in. diam by 9/16 in. d; w/2 set screws, no. 8-32 thd, 1/4 in. lg, located at 60° and 180° CW from pointer; dull matt finish; black; w/brass insert, not removable; w/indicator line white filled, located in center of pointer; CAQN cat. part F479B-3L-BB; CBTL part/dwg A-2011077 | Transformer Selector |
| E-408 | | Same as E-407 | Antenna Coupler Loading Selector |
| E-409 | | Same as E-407 | SWR Range Selector |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|-----------------------------------|
| I-401 | N17-L-6491-55 | LAMP, INCANDESCENT: 28v, 0.035 amp; Ref Dwg Group 7, special 952 base w/5/16 in. -32 NEF-2 thread and knurled sleeve, T-1-3/4, clear, green color plastic cap, one tungsten C-21 filament; 3/4 in. max o/a h; over 25 hrs rated life; any burning position; CG type 320G, dwg 165-22-327E | Tuner In |
| K-401 | N17-R-99999-0850 | RELAY, ARMATURE: 2C, MBCA Ref Dwg Group 4; DPDT, single break, 150v, 15 amp; 1 winding, 1 inductive winding, DC, 164 ohms, 24v operating voltage, 0.146 amp, operating current; 6 term for contacts, 2 term for coil; 1-15/16 in. lg, 1-5/8 in. wd, 1-1/2 in. h; mts by means of four no. 6-32 in. tapped holes 1-5/16 in. by 1/2 in. c to c; fast operate, fast release, high temperature coil, open frame; CBTL part/dwg A-2011223; same as K-3501 | Control Ground Antenna Coupler |
| M-401 | N17-M-99999-0173 | METER, MICROAMMETER: panel mtd; DC; marked "SWR Balance", low to 0 to high CW inscription range; round, steel, style no. 15, MBCA Ref Dwg Group 27; flange 2.695 in. diam, 0.38 in. thk, 2.21 in. body diam, 1.405 in. body depth from mtg surface, excluding term; 333 micro-amp current required for full scale deflection to the left; 333 micro-amp current required for full scale deflection to the right; magnetically shielded; green band on "low" side of "0" marking, red band on "high" side of "0" marking, white background; three 0.125 in. diam mtg holes on 1.22 in. radius spaced 120° apart; 2 solder lug type term; CV model 1521, class 52; CBTL part/dwg A-2011089 | SWR Indicator |
| M-402 | For Replacement Use N17-M-18962-6420 | METER, MICROAMMETER: panel mtd; DC; marked "POSITION", 0 to 100 microamperes, graduated in increments of 2 microamperes; round, metal case, style no. 26 Ref Dwg Group 27; 2.695 in. OD of mtg flange, 2.210 in. body diam, 1.405 in. body depth from mtg surface; o/a dimen 2.067 in. lg, 2.695 in. diam; 2.5% of full scale max error; shielded, black scale markings on white background; self-contained; three no. 4-40 NC-2 round head black screws w/nut and lockwashers for mtg, spaced 120° apart on a 1.22 in. radius; 2 solder lug term located on back spaced 1 in. c to c; CV model 1521, sealed and ruggedized per spec MIL-M-10304, type MR26W100DCUAR; CBTL part/dwg B-2011227 | Position Indicator |
| P-401 | N17-C-99999-2015 | CONNECTOR, RECEPTACLE, ELECTRICAL: consists of double row of 8 sliding contacts per row, male, flat; 2-7/16 in. lg, 7/8 in. wd, 9/16 in. h excluding contacts & term; w/partially enclosed plastic shell; polarized; non-locking; 5 amp, 600v DC; mtd by two 0.125 in. diam holes in diagonal corners, spaced 2.024 in. c to c in lg and 0.460 in. c to c in. wd; CPH type 26-159-16 | Power Connector |
| P-402 | | Same as P-401 | Power Connector |
| R-401 | | Not Used | |
| R-402 | N16-R-99999-0853 | RESISTOR, FIXED, WIRE WOUND: not in MBCA Ref Dwg Group 2; non-inductive winding; 10 ohms, ±5% tolerance; 25 w power dissipation, 200° C max continuous operating temp; body dimen excluding mtg and term, 1-1/16 in. lg, 1-1/16 in. wd, 9/16 in. h; silicone coating, resistant to moisture and salt spray; 2 wire lead type term, 7/16 in. lg; 2 mtg flanges with 1/8 in. diam holes at diagonally opposite ends of body, on 23/32 in. by 25/32 in. centers; die-cast, black anodized radiator finned housing; CBZX type RH-25; CBTL part/dwg A2011169-1 | Brake Current Limiter |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------------|---|---|----------------------------|
| R-403 thru R-405 | | Not Used | |
| R-406 | For Replacement Use N16-R-50569-940 | RESISTOR, FIXED, COMPOSITION: 75,000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42GF753K | Divider |
| R-407 | N16-R-50481-461 | RESISTOR, FIXED, COMPOSITION: 47,000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42GF473K | Divider |
| R-408 | N16-R-50678-818 | RESISTOR, FIXED, COMPOSITION: 150,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20GF154K | Multiplier |
| R-409 | N16-R-49940-816 | RESISTOR, FIXED, COMPOSITION: 1200 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20GF122K | Damper |
| R-410 | N16-R-50182-438 | RESISTOR, FIXED, COMPOSITION: 6200 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20GF622J | SWR Divider |
| R-411 | N16-R-87679-4540 | RESISTOR, VARIABLE: composition element; 1 section, 10,000 ohms, $\pm 10\%$; 2.25 w nominal power rating at 100% CW rotation, 2 w at 50% CW rotation; special taper, CBZ "U" taper, 1500, 3800, 6300, 8700 ohms resistance at 20, 40, 60 and 80% rotations respectively; 3 solder lug type term; metal case, enclosed 1-1/16 in. diam, 9/16 in. d; round, corrosion resistant metal shaft, slotted for screwdriver adjustment, 1/4 in. diam by 5/8 in. lg, normal torque, w/shaft locking device; contact arm insulated, no "off" position; mtd by bushing, 3/8 in. -32 NEF-2 thd 1/2 in. lg; CBZ type JLU 1031-SD4040L type J | Zero Adjustment |
| R-412 | N16-R-49921-349 | RESISTOR, FIXED, COMPOSITION: 1000 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20GF102J | SWR Divider |
| R-413 | N16-R-88009-4505 | RESISTOR, VARIABLE: composition element; 1 section, 100,000 ohms, $\pm 10\%$; 2.25 w nominal power rating at 100% CW rotation, 2 w at 50% CW rotation; special taper, CBZ "U" taper, 15000, 38000, 63000, 87000 ohms resistance at 20, 40, 60, 80% rotations respectively; 3 solder lug type term; metal case, enclosed, 1-1/16 in. diam, 9/16 in. d; round corrosion resistant metal shaft, slotted for screwdriver adj; 1/4 in. diam by 5/8 in. lg, normal torque, w/shaft locking device; contact arm insulated, no "off" position; mtd by bushing, 3/8 in. -32 NEF-2 thd 1/2 in. lg; CBZ type JLU 1041-SD4040L type J | Full Scale Adjust- ment |
| R-414 | N16-R-50011-438 | RESISTOR, FIXED, COMPOSITION: 2200 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20GF222J | SWR Divider |
| R-415 | | Same as R-412 | SWR Divider |
| R-416 | N16-R-50237-815 | RESISTOR, FIXED, COMPOSITION: 8200 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20GF822K | Multiplier |
| S-401 | | Not Used | |
| S-402 | N17-S-74692-4506 | SWITCH, TOGGLE: DPDT; per spec JAN-S-23; JAN type ST52P | Antenna Transfer Switch |
| S-403 | N17-S-99999-0593 | SWITCH, ROTARY: 1 section; 7 positions, max number of switching positions possible; non-"pile-up" type, single pole, 4 throws w/adj. stops, 125v AC, 5 amp; bronze contacts, | Transformer Selector |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|-----------------------------------|
| S-403 (cont) | | silver pl contact finish; 1-55/64 in. lg, 1-23/32 in. diam excluding lug terms o/a dimen; mtd by 15/32 in. lg, 15/32 in. -32 thd bushing; flatted type shaft, 17/32 in. lg, 0.248 in. diam; solder lug term; fully enclosed section; CAE type 8918K696; CBTL part/dwg B-2011219 | |
| S-404 | N17-S-99999-0601 | SWITCH, ROTARY: 2 sections; 7 positions, max number of switching positions possible; non-"pile-up" type, 2 poles, 6 throws w/adj. stops; 125v AC, 5 amp; bronze contacts, silver pl contact finish; 2-3/64 in. lg, 2-3/16 in. diam including lug terms o/a dimen; mtd by 15/32 in. lg, 15/32 in. -32 thd bushing; flatted type shaft, 17/32 in. lg, 0.248 in. diam; solder lug term; fully enclosed sections; CAE type 8918K697; CBTL part/dwg B-2011220 | Coupler Position Selector |
| S-405 | N17-S-99999-0609 | SWITCH, SENSITIVE: DPDT; AC, 125v or 250v, 5 amp per pole; phenolic body; 13/16 in. lg, 43/64 in. wd, 1-13/64 in. h o/a dimen; actuator plunger type, 21/32 in. lg, 21/64 in. OD, 0.010 in. over-travel; 24 oz operating force; 6 solder lug term; single hole mtg type, 15/32 in. diam bushing, 32 UNS-2A thd, 5/16 in. lg from mtg surface; c/o two CMU type 1SM1 switches and plunger actuator assembled to a bracket, simultaneous operation of two switches not provided; CMU type 2PB2; CBTL part/dwg A-2011082 | Down Jog |
| S-406 | | Same as S-405 | Up Jog |
| S-407 | | Same as S-405 | Slow Speed |
| S-408 | | Same as S-403 | SWR Range Selector |
| XI-401 | N17-L-50812-3395 | LAMPHOLDER: single holder; accommodates special 952, MBCA Ref Dwg Group 7; 28v, 0.035 amp; brass shell; 0.865 in. lg, 1/2 in. across flats of hexagonal top, 19/32 in. wd approx; 1 solder lug type term; mtd by 7/16 in. -28 NEF thd; body cad pl; CBTL part/dwg NL-981474-2 | Tuner In Lampholder |
| 501-599 | F16-P-67929-2998 | POWER SUPPLY, PP-1095/SRT: electronic type rectification; full wave; output data +1300v DC, 180 ma or +1050v DC, 150 ma; +500v DC, 364 ma; input data 115v AC, 60 cyc, single ph; o/a dimen 25-1/4 in. lg, 16 in. wd, 7-1/2 in. h; filter incl; drawer mtd; contains switching relay to ensure availability of +500v DC before +300v DC is applied; output voltage is +1300v DC except during phone operation when it is dropped to +1050v DC; p/o AN/SRT-14, 15, 16; CBTL part/dwg NL-981395-14 | |
| C-501 | For Replacement Use N16-C-52051-2432 | CAPACITOR, FIXED, PAPER DIELECTRIC: 15 mf +40%-15%; 1000 v DCW; oil filled; per spec JAN-C-25; JAN type CP70B1EG156X | Filter 500v Power Supply |
| C-502 | | Same as C-501 | Filter 500v Power Supply |
| C-503 | For Replacement Use N16-C-51484-7001 | CAPACITOR, FIXED, PAPER DIELECTRIC: 8 mf +40%-15%; 2000v DCW; oil filled; per spec JAN-C-25; JAN type CP70E1EJ805X | Filter (1050-1300) v Power Supply |
| C-504 | | Same as C-503 | Filter 1300v Power Supply |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------------|---|--|--|
| C-505 | N16-C-49197-3878 | CAPACITOR, FIXED, PAPER DIELECTRIC: 2 mf $\pm 10\%$; 600v DCW; per spec JAN-C-25; JAN type CP53B1EF205K | Timing Circuit for K-504 |
| E-501 thru E-503 | | Not used | |
| E-504 | Low Failure Item | TERMINAL BOARD: general purpose; 8 brass, silver pl solder lug term; 1/8 in. thk melamine glass board; 2-5/8 in. lg by 1-3/4 in. wd by 9/16 in. h o/a; two 0.169 in. diam mtg holes 2-1/8 in. c to c; CBTL part/dwg NL-900055-1 less item 1 | Component Mounting |
| E-505 | Low Failure Item | TERMINAL BOARD: general purpose; 8 brass, silver pl solder lug term; 1/8 in. thk melamine glass board; 2-5/8 in. lg by 1-3/4 in. wd by 9/16 in. h o/a; two 0.169 in. diam mtg holes 2-1/8 in. c to c; CBTL part/dwg NL-983948-1 less item 1 | Component Mounting |
| E-506 thru E-511 | | Not Used | |
| E-512 | Low Failure Item | TERMINAL BOARD: melamine glass sheet, incl 6 fuse clip term; w/o barriers; o/a dimen 5-13/16 in. lg, 3-3/8 in. wd, 2 in. thk; one SS bracket for mtg w/three 0.221 diam mtg holes 1-1/2 in. c to c; CBTL part/dwg NL-981084-2 | Component Mounting |
| F-501 | N17-F-14690-5910 | FUSE, CARTRIDGE: 6 amp, 250v AC; time delay, 150% for 0-1 minute, 300% for 6 sec minimum; ferrule type, silver pl; 1-1/2 in. lg, 0.406 in. diam; fiber body; one time; non-indicating; vibration resistant; per spec. MIL-F-15160A; MIL type FO9G6R00B | Single Phase Protection 500v Power Supply Plate |
| F-502 | | Same as F-501 | Single Phase Protection (1050-1300) v Power Supply Plate |
| F-503 | N17-F-14690-5775 | FUSE, CARTRIDGE: 1 amp, 250v AC; time delay; 150% for 0-1 minute, 300% for 6 sec minimum; ferrule type, silver pl; 1-1/2 in. lg, 0.406 in. diam; fiber body; one time; non-indicating; vibration resistant; per spec. MIL-F-15160A; MIL type FO9G1R00B | T-502 Protection |
| H-501 | Low Failure Item | SLIDE, chassis: left hand, c/o inner and outer slide, front latch, ball spacer w/stainless steel balls, and pin stop; corrosion resisting steel, electropolish finish; 23-1/8 in. lg closed, 1-5/8 in. h, 9/16 in. wd o/a; nine 0.169 in. diam mtg holes, countersunk, spaced 2-1/2 in. c to c, two 1/4 in. -28 NF-2 thd mtg holes spaced 1 in. c to c located on back end; CBTL part/dwg NL-900037-12-2 | For MVPS Chassis |
| H-502 | Low Failure Item | SLIDE, chassis: right hand; c/o inner and outer slide, front latch, ball spacer w/stainless steel balls, and pin stop; corrosion resisting steel, electropolish finish; 23-1/8 in. lg closed, 1-5/8 in. h, 9/16 in. wd o/a; nine 0.169 in. diam mtg holes, countersunk, spaced 2-1/2 in. c to c; two 1/4 in. -28 NF-2 thd mtg holes, 1 in. c to c located on back end; CBTL part/dwg NL-900037-12-1 | For MVPS Chassis |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--|
| H-503 | N16-C-301129-741 | CLAMP, tube: stainless steel; c/o strap and bracket; 1-3/8 in. diam by 15/16 in. h o/a; CAIS type 926C-3 dwg no. 1263 | Clamp for V-501 |
| H-503.1 | | Same as H-503 | Clamp for V-502 |
| H-503.2 | | Same as H-503 | Clamp for V-503 |
| H-503.3 | | Same as H-503 | Clamp for V-504 |
| I-501 | N17-L-3917-300 | LAMP, INCANDESCENT: 125v DC, 6 w; MBCA Ref Dwg Group 7, double contact bayonet candelabra base, S-6, clear, 1 tungsten filament, C-7A; 1-13/16 in. max o/a h; over 25 hrs rated life; any burning position; CAYZ type no. 6S6DC-125 | T-501 Power Indicator 500v Power Supply Plate |
| I-502 | | Same as I-501 | T-503 Power Indicator (1050-1300) v Power Supply Plate |
| I-503 | G17-L-6806-130 | LAMP, GLOW: neon, 105-125v, 1/25 w; MBCA Ref. Dwg Group 7, single contact bayonet candelabra base, T-3-1/4, clear, orange-red glow; 1-3/16 in. max o/a h; CG type NE-51 | Indicator 500v Supply |
| I-504 | | Same as I-503 | Indicator (1050-1300) v Supply |
| J-501 | N17-C-99999-2015 | CONNECTOR, RECEPTACLE, ELECTRICAL: consists of double row of 8 sliding contacts per row, male, flat; 2-7/16 in. lg, 7/8 in. wd, 9/16 in. h; excluding contacts and term; w/ partially enclosed plastic shell; polarized; non-locking; 5 amp, 600v DC; mtd by two 0.125 in. diam holes in diagonal corners, spaced 2.024 in. c to c in lg and 0.460 in. c to c in wd; CPH type 26-159-16; same as P-401 | Inter-Unit Wiring |
| J-502 | | Same as J-501 | Inter-Unit Wiring |
| J-503 | N17-I-59705-1251 | INSULATOR, FEEDTHRU: brass; silver pl; 15/16 in. lg, 5/8 in. o/a diam; CNA type XS-7 modified; CBTL part/dwg NL-900095-1 | Medium Voltage Output |
| J-504 | N17-C-99999-1196 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female; straight type; phone type connector; dielectric red nylon; 29/32 in. lg, 5/16 in. wd incl hex coupling nut o/a dimen; 1000v peak; w/inclosing shell, cylindrical shape, brass, nickel pl; not polarized, 1 hole, 1/4 in. diam; 1/4-32 in. thd on receptacle for mating w/coupling nut; CARO part 225A | +500v Test Point |
| K-501 | N17-R-65155-6222 | RELAY, ARMATURE: contact arrangement 2C, Ref Dwg Group 4, 115v AC, 5 amp; 1 inductive winding, 140 ohms DC, 24v operating voltage, 0.130 amps operating current; 2 term on contact, 2 term on coil; continuous duty; 1-3/4 in. lg by 1 in. wd by 2-1/16 in. h o/a dimen; mtd by six no. 6-32 tapped mtg holes 3/4 in. c to c, 2 holes on one side, four on bottom; CSD type no. 218XBX; CBTL part/dwg NL-982577-1 | T-501 Pri. Contactor 500v Power Supply |
| K-502 | | Same as K-501 | T-503 Pri. Tap Transfer Phone CW and other Control Functions |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---|
| K-503 | N17-R-65144-1150 | RELAY, ARMATURE: contact arrangement 4A2B, MBCA Ref Dwg Group 4, single break; 1 inductive winding, 24v DC operating voltage; 2 term on contact, 2 term on coil; continuous duty; 2-1/2 in. lg, 1 in. wd, 1-7/8 in. h o/a dimen; mtd by means of 4 no. 6-32 tapped holes, 3/4 in. horizontal centers, 7/8 in. vertical centers; CSD type 218, frame part no. 218DXB103, dwg no. 17593; CBTL part/dwg NL-982599-1 | T-503 Pri. Con- tactor 500v Power Supply and other Control Functions |
| K-504 | N17-R-65657-9950 | RELAY, ARMATURE: contact arrangement 2A1B, MBCA Ref Dwg Group 4, A normally open, B normally closed, single break, AC-DC, contact form A uncoded rated 300v DC at 0.3 amp, contact forms A and B of code 24 rated at 4.0 amp; 1 inductive winding, 20,000 ohms DC, 220v DC operating voltage; 6 term on contact, 2 term on coil; continuous duty; 2-1/4 in. lg by 1-1/16 in. wd by 1-3/4 in. h o/a dimen; mtd with 2 no. 6-32 tapped holes, 3/4 in. c to c; impregnated coil and pile-up; CRY type J part no. G-49556; per BuShips spec. 40T9; CBTL part/dwg NL-981040-1 | 300v Make-Break |
| L-501 | N16-R-29026-7751 | REACTOR: filter choke; one section; three hy at 0.414 amp DC; 35 ohms DC resistance; 2250v RMS test voltage; hermetically sealed, steel case; 3-23/32 in. diam, 4-1/2 in. lg o/a; four 0.201 in. diam mtg holes, on 3 in. by 3 in. mtg/c on 3-23/32 in. sq mtg flange; two solder lug type term on insulators 1/2 in. lg by 7/16 in. OD o/a, located on mtg surface; CUT part/dwg F-3586, Rev. 2; CBTL part/dwg NL-980824-1 | Filter 500v Power Supply |
| L-502 | N16-R-29923-9036 | REACTOR: swinging choke; one section; 3 hy min o/a inductance, 0.050 amp min DC, 15 hy max o/a inductance, 0.414 amp max DC; 40 ohms DC resistance; 2250v RMS test voltage; hermetically sealed, steel case; o/a dimen, 4-15/32 in. OD, 5-1/2 in. h; four 0.288 in. diam mtg holes on 3-9/16 in. by 3-9/16 in. mtg/c on 4-15/32 in. sq mtg flange; two solder lug type term on insulators 1/2 in. lg by 7/16 in. OD o/a, located on mtg surface; CUT part/dwg F-3584, Rev. 2; CBTL part/dwg NL-980823-1 | Filter 500v Power Supply |
| L-503 | N16-R-29190-5576 | REACTOR: filter choke; one section; 8 hy o/a inductance, 0.230 amp DC; 125 ohms DC resistance; 5200v RMS test voltage; hermetically sealed, steel case; o/a dimen, 3-9/32 in. lg by 3-1/32 in. wd by 4-1/2 in. h; four no. 8-32 thd by 15/32 in. lg mtg studs on 2-3/8 in. by 2-11/16 in. mtg/c; two solder lug type term located on mtg surface on insulators 13/16 in. lg by 9/16 in. OD o/a; CUT part/dwg F-3590-1, Rev. 1; CBTL part/dwg NL-980851-1 | Filter (1050-1300) v Power Supply |
| L-504 | N16-R-29955-1082 | REACTOR: swinging choke; one section; 8 hy min o/a inductance, 0.050 amp min DC, 40 hy max o/a inductance, 0.230 amp DC; 140 ohms DC resistance; 5200v RMS test voltage; hermetically sealed, steel case; o/a dimen, 3-3/4 in. lg, 3-3/4 in. wd, 4-9/16 in. h; four no. 10-32 thd by 19/32 in. lg mtg studs on 2-7/8 in. by 3 in. mtg/c; two solder lug type term located on mtg surface on insulators 7/8 in. lg by 9/16 in. OD o/a; CUT part/dwg F-3588-1, Rev. 2; CBTL part/dwg NL-980850-1 | Filter (1050-1300) v Power Supply |
| M-501 | N17-M-32915-3251 | METER, TIME: elapsed time indicator; synchronous self-starting electric motor, 1/6 rpm; electro-mechanical control; direct reading; automatic start and stop; 2-1/2 in. h, 2-1/8 in. wd, 2-3/64 in. d o/a; 5 rotating drum counters each calibrated 0 to 9; w/window opening face; operates from 115v, 60 cycle line; synchronized; two 0.132 in. diam mtg holes spaced 1-7/8 in. c to c; total registry of counter is 9999.9 hours, figures on first | Total Hours Fila- ment |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--------------------------------------|
| M-501 (cont) | | four drums in black and on last drum in red; flush mtg; CHP type 5701-1/6 | |
| M-502 | | Same as M-501 | Total Hours Plate |
| O-501 | N17-C-800934-501 | CLIP, ELECTRICAL: grid plate style 7, MBCA Ref Dwg Group 37; brass, cad pl; 1-3/8 in. lg, 1/2 in. wd; CNA type no. 12 | Plate Cap for V-501 |
| O-502 | | Same as O-501 | Plate Cap for V-502 |
| O-503 | | Same as O-501 | Plate Cap for V-503 |
| O-504 | | Same as O-501 | Plate Cap for V-504 |
| O-505 | N17-C-804784-201 | CLIP, ELECTRICAL: resistor; spring temper phosphor bronze; silver pl; 3/4 in. lg by 7/8 in. wd by 1-7/32 in. h o/a dimen; 31 to 60 amps, 250v; 15/64 in. mtg hole; used as resistor clip; Navy dwg RE28AA116F, type no. 28003; p/o E-512 | p/o Terminal Board |
| O-505.1 | | Same as O-505, p/o E-512 | p/o Terminal Board |
| O-505.2 | | Same as O-505, p/o E-512 | p/o Terminal Board |
| O-505.3 | | Same as O-505, p/o E-512 | p/o Terminal Board |
| O-505.4 | | Same as O-505, p/o E-512 | p/o Terminal Board |
| O-505.5 | | Same as O-505, p/o E-512 | p/o Terminal Board |
| O-506 | Procured on demand by nearest Naval Shore Supply Activity | RETAINER, bearing: upper; c/o rectangular, corrosion resisting steel, electropolish finish; ball spacer w/twelve 0.125 in. diam stainless steel balls, self-retained; 11.344 in. lg, 1/4 in. wd, 0.125 in. thk o/a dimen; CCCS dwg A-9019.9-1 (Revision #3); p/o H-501 | p/o Chassis Slide |
| O-506.1 | | Same as O-506; p/o H-502 | p/o Chassis Slide |
| O-507 | Low Failure Item | SPRING: helical compression type; 0.032 in. diam music wire per NAVY spec. 22W11C; 3/8 in. h, 1/2 in. diam o/a; 3-1/2 turns, RH or LH wound; first and last 3/4 turns are flat; cad pl; CBTL part/dwg NL-900018-1; u/w H-501 | Stop Button Spring for Chassis Slide |
| O-507.1 | | Same as O-507; u/w H-502 | Stop Button Spring for Chassis Slide |
| O-508 | Procured on demand by nearest Naval Shore Supply Activity | RETAINER, bearing: lower; c/o rectangular, corrosion resisting steel, electropolish finish; ball spacer w/twelve 0.125 in. diam stainless steel balls, self-retained; 10.844 in. lg, 1/4 in. wd, 0.125 in. thk o/a dimen; CCCS dwg A-9019.9-2 (Revision #3); p/o H-501 | p/o Chassis Slide |
| O-508.1 | | Same as O-508; p/o H-502 | p/o Chassis Slide |
| O-509 | Low Failure Item | SPRING: loop type; for latch; 0.038 in. diam corrosion resisting steel spring wire; 2-1/2 in. lg, 11/16 in. h o/a; one end semi-hook type, one end open; irregular shape; CBTL part/dwg NL-900991-1; p/o H-501 | For Latch in Chassis Slide |
| O-509.1 | | Same as O-509; p/o H-502 | For Latch in Chassis Slide |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------------|---|---|------------------------------------|
| O-510 | Low Failure Item | SPRING: flat type; beryllium copper alloy no. 25 conductor 1/4 H, 0.025 in. thk strip per MIL-C-947, silver pl; one no. 3-48 thd mtg hole on term; 1-3/8 in. lg, 15/16 in. h; CBTL part/dwg NL-900142-1; p/o S-501 | For Contact in S-501 |
| R-501 | N16-R-62072-5515 | RESISTOR, FIXED, WIRE WOUND: 10,000 ohms, $\pm 5\%$; 50 w; per spec JAN-R-26A; JAN type RW13F103 | Bleeder 500v Power Supply |
| R-502 | N16-R-62108-3201 | RESISTOR, FIXED, WIRE WOUND: 14,000 ohms, $\pm 5\%$; 50 w; per spec JAN-R-26A; JAN type RW13F143 | Bleeder (1050-1300) v Power Supply |
| R-503 thru R-512 | | Not Used | |
| R-513 | | Same as R-502 | Bleeder (1050-1300) v Power Supply |
| R-514 | N16-R-50930-811 | RESISTOR, FIXED, COMPOSITION: 820,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF824K | Dropping Resistor for I-503 |
| R-515 | N16-R-50787-231 | RESISTOR, FIXED, COMPOSITION: 390,000 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30BF394K | Dropping Resistor for I-504 |
| R-516 | | Same as R-515 | Dropping Resistor for I-504 |
| R-517 | | Same as R-515 | Dropping Resistor for I-504 |
| R-518 | N16-R-50715-231 | RESISTOR, FIXED, COMPOSITION: 220,000 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30BF224K | Dropping Resistor for I-504 |
| R-519 | N16-R-50202-511 | RESISTOR, FIXED, COMPOSITION: 6,800 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42BF682K | Dropping Resistor for K-504 |
| R-520 | | Same as R-519 | Dropping Resistor for K-504 |
| R-521 | | Same as R-519 | Dropping Resistor for K-504 |
| R-522 | | Same as R-519 | Dropping Resistor for K-504 |
| R-523 | N16-R-49923-531 | RESISTOR, FIXED, COMPOSITION: 1000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42BF102K | Timing Circuit for K-504 |
| S-501 | N17-S-99999-0626 | SWITCH, INTERLOCK: push with snap action cheater; 2 piece door type; double pole single throw, male and female type, beryllium copper alloy strip contact; thermosetting plastic molding body; 1-1/2 in. lg by 1-1/2 in. wd by 1/2 in. thk o/a dimen excluding term posts and push rod; 2 screw type term located on both ends of switch; mtd by means of two 0.128 in. diam countersunk holes spaced 0.875 in. apart; interrupts 24v DC; CBTL part/dwg NL-900059-2 | Interlock Switch |
| T-501 | N17-T-77122-3519 | TRANSFORMER, POWER, STEP-UP: hermetically sealed steel case; 110v AC, 60 cyc $\pm 5\%$, input single ph; one output winding, 1240v, 0.414 amp DC center-tapped; primary test voltage of 1500v RMS, secondary test voltage 2300v RMS; Robertson potting compound; 5 in. max lg by 4-1/2 in. max wd | 500v Power Supply Plate Supply |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--|
| T-501 (cont) | | by 6 in. h o/a dimen; MBCA Ref Dwg Group 12; 5 solder lug type term located on mtg surface; four no. 10-32 thd by 5/8 in. lg mtg studs on 3-1/4 in. by 3-7/16 in. mtg/c; electrostatic shield grounded to case; CUT part no. F-3580; CBTL part/dwg NL-980846-1 | |
| T-502 | N17-T-70231-6735 | TRANSFORMER, POWER, STEP-DOWN: hermetically sealed steel case; 110v AC, 60 cyc $\pm 5\%$, single ph input; 3 output windings, no. 1 secondary 2.5v at 10.0 amps, no. 2 secondary 2.5v at 10.0 amps, no. 3 secondary 6.3v at 2.0 amps, no. 1 secondary is center-tapped; primary test voltage 1500v RMS, secondaries 5200v RMS; Robertson potting compound; 3-3/4 in. lg max by 3-3/4 in. wd max by 4-17/32 in. max dimen, MBCA Ref Dwg Group 12; 9 solder lug type term, 7/8 in. lg by 1/2 in. diam, on standoffs located on mtg surface; four mtg inserts no. 10-32 thd located on 3 by 3 in. sq, electrostatically shielded and grounded to case; CUT part/dwg F-3578; CBTL part/dwg NL-980849-1 | Rectifier Filament Supply for V-501, V-502, V-503, V-504 |
| T-503 | N17-T-77123-9794 | TRANSFORMER, POWER, STEP-UP: hermetically sealed steel case; 110v AC, 60 cyc $\pm 5\%$, single ph input, tapped to give 3160 or 2480v output; one output winding 2480v/3160v at 0.19/0.23 amp center tapped; primary test voltage 1500v, secondary 4250v; Robertson potting compound; 6-1/32 in. max lg by 4-5/8 in. max wd by 6-1/32 in. h o/a dimen; MBCA Ref Dwg Group 12; 6 solder lug type term, 3 on conical standoffs 1/2 in. diam by 7/8 in. lg, 3 on bushing 7/16 in. by 1/2 in. diam located on mtg surface; mtd with four no. 10-32 thd by 5/8 in. lg mtg studs located on 3-15/16 in. by 3-7/16 in. mtg/c; electrostatic shield grounded to case; CUT part/dwg F-3582; CBTL part/dwg NL-980848-1 | Plate Supply for (1050-1300) v Power Supply |
| V-501 | N16-T-53228 | ELECTRON TUBE: diode; per spec JAN-1A; JAN type 3B28 | 500v Power Supply Rectifier |
| V-502 | | Same as V-501 | 500v Power Supply Rectifier |
| V-503 | | Same as V-501 | (1050-1300) v Power Supply Rectifier |
| V-504 | | Same as V-501 | (1050-1300) v Power Supply Rectifier |
| XF-501 | Low Failure Item | FUSEHOLDER: extractor post type; 250v; 30 amp; accommodates 1 fuse, cartridge type, 1-1/2 in. lg, 13/32 in. diam; black bakelite body; bright alloy pl brass contacts; 2-1/4 in. lg, 1.775 in. wd, 1.20 in. h, o/a dimen; 2 solder lug type term, hot tin dipped; two 0.167 in. mtg holes 1.312 in. c to c for fastening to panel; one mtg hole 0.865 in. diam; waterproof; CFA type HPC-DZ; CBTL part/dwg NL-900068-2 | Holder for F-501 |
| XF-502 | | Same as XF-501 | Holder for F-502 |
| XF-503 | | Same as XF-501 | Holder for F-503 |
| XI-501 | N17-L-99999-0129 | LIGHT, INDICATOR: supplied w/lens, 1 in. diam red convex; screw type lens holder; accommodates S6 DC bulb w/bayonet base of double contact type; 125v DC, 0.6 amp, 75 w; brass, black nickel shell, enclosed; 3 in. lg, 1-1/8 in. diam o/a dimen; 1 mtg hole required 1 in. diam; accommodates 21/32 in. thk panel; horizontally mtd; lamp replaceable from front of | Retainer for I-501 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--------------------|
| XI-501 (cont) | | panel; 2 solder lug type term, located on socket base, both insulated from shell; CAYZ type 51202-11-1 | |
| XI-502 | | Same as XI-501 | Retainer for I-502 |
| XI-503 | N17-L-76763-1597 | LIGHT, INDICATOR: supplied w/lens, 5/8 in. diam clear, fluted, screw type holder; accommodates neon T3-1/4, NE51 lamp, single contact miniature bayonet base, 110v; brass shell, black nickel finish, enclosed; 2-5/16 in. lg, 15/16 in. diam, o/a dimen; 1 mtg hole required 11/16 in. diam, accommodates up to 1/4 in. thick panel; horizontally mtd; lamp replaceable from front of panel; 2 solder lug type term, located on socket base, both insulated from shell; includes built in 51,000 ohm 1/3 w composition resistor; CAYZ type 53408-XP18-997 | Retainer for I-503 |
| XI-504 | | Same as XI-503 | Retainer for I-504 |
| XV-501 | N16-S-60841-4251 | SOCKET, ELECTRON TUBE: 4 contacts, phosphor bronze, silver pl; medium round; 2-5/32 in. lg, 1-3/8 in. wd, 41/64 in h, o/a dimen excluding term; ceramic steatite body; bracket and retainer ring mtg; 1.172 in. diam chassis hole required, 2 mtg holes 0.14 in. diam required, spaced 1-49/64 in. c to c; CJA type 49368 | Socket for V-501 |
| XV-502 | | Same as XV-501 | Socket for V-502 |
| XV-503 | | Same as XV-501 | Socket for V-503 |
| XV-504 | | Same as XV-501 | Socket for V-504 |
| 601-699 | F16-C-10654-6564 | CABINET, ELECTRICAL EQUIPMENT, CY-1571/SRT: material of frame - steel, sides - aluminum, top plate - cold roll steel, back plate - hot roll steel pickled and oiled; grey enamel finish; o/a dimen 25-31/32 in. lg, 16 in. wd, 55-3/8 in. h; expendable mtg blocks, for permanent installation blocks are removed and cabinet mtd on MOUNTING MT-1423/SRT; wired; components are mtd in drawers on roller rails, retractable cables in all drawers, same as CABINET, ELECTRICAL EQUIPMENT CY-1571A/SRT except for material of top and back plate; cabinet of TRANSMITTER GROUP OA-684/SRT; p/o AN/SRT-14, 15, 16; CBTL part/dwg NL-900851-26-1 | |
| 601-699 | F16-C-10654-6563 | CABINET, ELECTRICAL EQUIPMENT, CY-1571A/SRT: material of frame - steel, sides - aluminum, top plate - aluminum, back plate - corrosion resistant steel; grey enamel finish; o/a dimen 25-31/32 in. lg, 16 in. wd, 55-3/8 in. h; expendable mtg blocks, for permanent installation blocks are removed and cabinet mtd on MOUNTING MT-1423/SRT; wired; components are mtd in drawers on roller rails, retractable cables in all drawers, same as CABINET, ELECTRICAL EQUIPMENT CY-1571/SRT except for material of top and back plate, this cabinet is the non-magnetic version; cabinet of TRANSMITTER GROUP OA-684A/SRT; p/o AN/SRT-14A, 15A, 16A; CBTL part/dwg NL-900851-26-2 | |
| A-601 | Low Failure Item | RAIL, assembly: left hand; c/o rail, rear latch, 4 rollers, 4 roller shafts; corrosion resisting steel, electropolish finish; o/a dimen 17-1/2 in. lg, 1 in. h, 0.390 in. wd; three no. 10-24 tapped mtg holes, spaced 4.093 in. and 9.438 in. c to c; CBTL part/dwg NL-900369-12-2 | For MVPS Chassis |

TABLE 8-3 TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---|
| A-602 | Low Failure Item | RAIL, assembly: right hand; c/o rail, rear latch, 4 rollers, 4 roller shafts; corrosion resisting steel, electropolish finish; o/a dimen 17-1/2 in. lg, 1 in. h, 0.390 in. wd; three no. 10-24 tapped mtg holes, spaced 4.093 in. and 9.438 in. c to c; CBTL part/dwg NL-900369-12-1 | For MVPS Chassis |
| A-603 | | Same as A-601 | For LLRM Chassis |
| A-604 | | Same as A-602 | For LLRM Chassis |
| A-605 | | Same as A-601 | For RFA Chassis |
| A-606 | | Same as A-602 | For RFA Chassis |
| A-607 | | Same as A-601 | For RFO Chassis |
| A-608 | | Same as A-602 | For RFO Chassis |
| A-609 | | Same as A-601 | For LVPS Chassis |
| A-610 | | Same as A-602 | For LVPS Chassis |
| E-601 | N17-B-78039-6369 | TERMINAL BOARD: molded melamine board; 14 double screw type term; barrier type; 6-7/8 in. lg, 1-1/8 in. wd, 1/2 in. h o/a; four 0.175 in. diam mtg holes, two on each end, spaced 6-9/16 in. c to c on lg, 27/64 in. c to c on wd; CJC type 14-141-B | External Cable Connector |
| E-602 | | Same as E-601 | External Cable Connector |
| E-603 | For Replacement Use N17-B-78038-4120 | TERMINAL BOARD: molded melamine board; 14 double screw type term; barrier type; 5-7/8 in. lg, 7/8 in. wd, 13/32 in. h o/a dimen; four 0.160 in. diam mtg holes two on each end, 5-5/8 in. c to c on lg, 5/16 in. c to c on wd; CJC type 14-140-B | Base Mount Cable Connector |
| E-604 | | Same as E-603 | Cable to Antenna Tuning Unit |
| E-605 | | Same as E-603 | Cable to Antenna Tuning Unit |
| E-606 | N17-B-77987-4697 | TERMINAL BOARD: molded melamine board; 12 double screw type term; barrier type; 5-1/8 in. lg, 7/8 in. wd, 13/32 in. h o/a dimen; four 0.160 in. diam mtg holes two on each end, 4-7/8 in. c to c on lg, 5/16 in. c to c on wd; CJC type 12-140-B | Inter-Unit Wiring Connector |
| E-607 | | Same as E-606 | Inter-Unit Wiring Connector |
| E-608 | Low Failure Item | TERMINAL BOARD: molded thermosetting plastic body; 3 term; no. 8-32 thd, stud type, barrier type; 4-3/16 in. lg, 2-1/8 in. wd, 25/32 in. h o/a; four 0.193 in. diam mtg holes, two on each end, spaced 3-3/4 in. c to c on lg, 1-7/16 in. c to c on wd; CBTL part/dwg NL-900240-2 | High Voltage Connector PA; LLRM Output |
| E-609 | Shop Manufacture | CONTACT, ELECTRICAL: brass contactor, silver pl finish; press-fitted into a hard rubber body; 1/2 in. thk, 23/32 in. wd, 1-1/2 in. h o/a dimen; two 0.128 in. diam mtg holes located on side spaced 3/4 in. c to c and two 0.128 in. diam mtg holes counterbored 5/16 in. located in front spaced 1-1/16 in. c to c for universal mtg; CBTL part/dwg NL-900138-1 | u/w Interlock Switch S-1306 RFA |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|----------------------------------|
| E-610 | | Same as E-609 | u/w Interlock Switch S-1104 LLRM |
| E-611 | | Same as E-609 | u/w Interlock Switch S-2919 RFO |
| E-612 | | Same as E-609 | u/w Interlock Switch S-3006 LVPS |
| E-613 | | Same as E-609 | u/w Interlock Switch S-501 MVPS |
| H-601 | Low Failure Item | HANGER, CABLE: extensible cable support w/cable clips; 3/4 in. diam of cable accommodated; 0.020 in. thk by 13/16 in. wd dimen of spring extensible cable blank; material of metallic parts brass, carbon spring steel; cad pl finish; c/o 16 cable clips riveted to spring extensible cable blank w/spring stiffener at one end; designed to support and permit lateral movement of cable; two 0.312 in. diam mtg holes at one end spaced 3/4 in. c to c and two 0.180 in. diam holes on other end spaced 0.375 in. c to c for fastening to connector receptacle housing; CBTL part/dwg NL-901230-12 | For MVPS Chassis |
| H-602 | Low Failure Item | HANGER, CABLE: extensible cable support w/cable clips; 3/4 in. diam of cable accommodated; 0.020 in. thk by 13/16 in. wd dimen of spring extensible cable blank; material of metallic parts brass, carbon spring steel; cad pl finish; c/o 15 cable clips riveted to spring extensible cable blank w/spring stiffener at one end; designed to support and permit lateral movement of cable; two 0.312 in. diam mtg holes at one end spaced 3/4 in. c to c and two 0.180 in. diam holes on other end spaced 0.375 in. c to c for fastening to connector receptacle housing; CBTL part/dwg NL-900898-12 | For RFO Chassis |
| H-603 | | Same as H-601 | For LLRM Chassis |
| H-604 | | Same as H-601 | For RFA Chassis |
| H-605 | | Same as H-601 | For LVPS Chassis |
| J-601 | N17-C-99999-2016 | CONNECTOR, RECEPTACLE, ELECTRICAL: c/o double row of 8 sliding contacts per row, female; 2-7/16 in. lg, 7/8 in. wd, 9/16 in. h; polarized; nonlocking; 5 amp, 600v DC; mtd by two 0.125 in. diam holes in diagonal corners, spaced 2.024 in. c to c in lg, and 0.460 in. c to c in wd; CPH 26-190-16-1 | Receptacle for J-1301 |
| J-602 | | Same as J-601 | Receptacle for J-1302 |
| J-603 | | Same as J-601 | Receptacle for J-1101 |
| J-604 | | Same as J-601 | Receptacle for J-1102 |
| J-605 | | Same as J-601 | Receptacle for J-1103 |
| J-606 | | Same as J-601 | Receptacle for J-2916 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--------------------------|
| J-607 | | Same as J-601 | Receptacle for J-2917 |
| J-608 | | Same as J-601 | Receptacle for J-2918 |
| J-609 | | Same as J-601 | Receptacle for J-3001 |
| J-610 | | Same as J-601 | Receptacle for J-3002 |
| J-611 | | Same as J-601 | Receptacle for J-3003 |
| J-612 | | Same as J-601 | Receptacle for J-501 |
| J-613 | | Same as J-601 | Receptacle for J-502 |
| MS-601 | Low Failure Item | CLOTH, wire: brass wire; no. 20 mesh; wire diam 0.016 in.; octagon shape; 8-3/8 in. by 8-3/8 in. o/a dimen; CBTL part/dwg NL-981532-2 | Screen for Top Cover |
| MS-601.1 | | Same as MS-601 | Screen for Top Cover |
| MS-602 | Low Failure Item | CLOTH, wire: brass wire; no. 20 mesh; wire diam 0.016 in.; edges folded over 5/16 in. and tin dipped; eight 0.169 in. diam holes equally spaced around edge of screen; 10-3/8 in. lg by 1-19/32 in. wd o/a; CBTL part/dwg NL-925383-1 | Screen for Bottom Louver |
| MS-603 | Low Failure Item | CLOTH, wire: brass wire; no. 20 mesh; wire diam 0.016 in.; edges folded over 5/16 in. and tin dipped; ten 0.169 in. diam holes equally spaced around edge of screen; 10-3/8 in. lg by 4-11/32 in. wd o/a; CBTL part/dwg NL-925382-1 | Screen for Middle Louver |
| MS-604 | Low Failure Item | CLOTH, wire: brass wire; no. 20 mesh; wire diam 0.016 in.; edges folded over 7/16 in. and tin dipped; twelve 0.169 in. diam holes equally spaced around edge of screen; 10-1/2 in. by 10-5/16 in. o/a; CBTL part/dwg NL-925381-2 | Screen for Top Louver |
| O-601 | Low Failure Item | SHAFT, roller: rear; monel cold drawn; 13/32 in. lg by 17/32 in. diam o/a; CBTL part/dwg NL-900366-1; p/o A-601 | p/o Rail Assy |
| O-601.1 | | Same as O-601, p/o A-602 | p/o Rail Assy |
| O-601.2 | | Same as O-601, p/o A-603 | p/o Rail Assy |
| O-601.3 | | Same as O-601, p/o A-604 | p/o Rail Assy |
| O-601.4 | | Same as O-601, p/o A-605 | p/o Rail Assy |
| O-601.5 | | Same as O-601, p/o A-606 | p/o Rail Assy |
| O-601.6 | | Same as O-601, p/o A-607 | p/o Rail Assy |
| A-601.7 | | Same as O-601, p/o A-608 | p/o Rail Assy |
| A-601.8 | | Same as O-691, p/o A-609 | p/o Rail Assy |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|------------------------|
| O-601.9 | | Same as O-601, p/o A-610 | p/o Rail Assy |
| O-602 | Low Failure Item | ROLLER, bearing: rear; corrosion resisting steel, electro-polish finish; 0.902 in. OD by 0.265 in. wd o/a; 0.4375 in. diam shaft hole; CBTL part/dwg NL-900365-1; p/o A-601 | p/o Rail Assy |
| O-602.1 | | Same as O-602, p/o A-602 | p/o Rail Assy |
| O-602.2 | | Same as O-602, p/o A-603 | p/o Rail Assy |
| O-602.3 | | Same as O-602, p/o A-604 | p/o Rail Assy |
| O-602.4 | | Same as O-602, p/o A-605 | p/o Rail Assy |
| O-602.5 | | Same as O-602, p/o A-606 | p/o Rail Assy |
| O-602.6 | | Same as O-602, p/o A-607 | p/o Rail Assy |
| O-602.7 | | Same as O-602, p/o A-608 | p/o Rail Assy |
| O-602.8 | | Same as O-602, p/o A-609 | p/o Rail Assy |
| O-602.9 | | Same as O-602, p/o A-610 | p/o Rail Assy |
| O-603 | Low Failure Item | SPRING: left hand; torsion type; 0.038 in. diam corrosion resisting steel spring wire; 1.116 in. lg, 0.250 in. wd, 0.250 in. h o/a; two turns, LH turns; one end straight, short end bent 90° on 1/32 in. radius, 1/8 in. lg; mts over 0.156 in. diam pin; working moment is 16 in. oz ±5 in. oz; CBTL part/dwg NL-900981-1; p/o A-601 | For Latch in Rail Assy |
| O-603.1 | | Same as O-603, p/o A-603 | For Latch in Rail Assy |
| O-603.2 | | Same as O-603, p/o A-605 | For Latch in Rail Assy |
| O-603.3 | | Same as O-603, p/o A-607 | For Latch in Rail Assy |
| O-603.4 | | Same as O-603, p/o A-609 | For Latch in Rail Assy |
| O-604 | Low Failure Item | SPRING: right hand; torsion type; 0.038 in. diam corrosion resisting steel spring wire; 1.116 in. lg, 0.250 in. h, two turns, RH turns; one end straight, short end bent 90° on 1/32 in. radius, 1/8 in. lg; mts over 0.156 in. diam pins; working moment is 16 in. oz ±5 in. oz; CBTL part/dwg NL-900982-1; p/o A-602 | For Latch in Rail Assy |
| O-604.1 | | Same as O-604, p/o A-604 | For Latch in Rail Assy |
| O-604.2 | | Same as O-604, p/o A-606 | For Latch in Rail Assy |
| O-604.3 | | Same as O-604, p/o A-608 | For Latch in Rail Assy |
| O-604.4 | | Same as O-604, p/o A-610 | For Latch in Rail Assy |
| O-605 | | Not Used | |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description , | Locating Function |
|---------------------|---|---|----------------------|
| O-606 | Low Failure Item | ROLLER, bearing: center; corrosion resisting steel, electro-polish finish; 0.988 in. OD by 0.156 in. wd o/a; 0.4375 in. diam shaft hole; CBTL part/dwg NL-900986-1; p/o A-601 | p/o Rail Assy |
| O-606. 1 | | Same as O-606, p/o A-601 | p/o Rail Assy |
| O-606. 2 | | Same as O-606, p/o A-601 | p/o Rail Assy |
| O-606. 3 | | Same as O-606, p/o A-602 | p/o Rail Assy |
| O-606. 4 | | Same as O-606, p/o A-602 | p/o Rail Assy |
| O. 606. 5 | | Same as O-606, p/o A-602 | p/o Rail Assy |
| O-606. 6 | | Same as O-606, p/o A-603 | p/o Rail Assy |
| O-606. 7 | | Same as O-606, p/o A-603 | p/o Rail Assy |
| O-606. 8 | | Same as O-606, p/o A-603 | p/o Rail Assy |
| A-606. 9 | | Same as O-606, p/o A-604 | p/o Rail Assy |
| O-606. 10 | | Same as O-606, p/o A-604 | p/o Rail Assy |
| O-606. 11 | | Same as O-606, p/o A-604 | p/o Rail Assy |
| O-606. 12 | | Same as O-606, p/o A-605 | p/o Rail Assy |
| O-606. 13 | | Same as O-606, p/o A-605 | p/o Rail Assy |
| O-606. 14 | | Same as O-606, p/o A-605 | p/o Rail Assy |
| O-606. 15 | | Same as O-606, p/o A-606 | p/o Rail Assy |
| O-606. 16 | | Same as O-606, p/o A-606 | p/o Rail Assy |
| O-606. 17 | | Same as O-606, p/o A-606 | p/o Rail Assy |
| O-606. 18 | | Same as O-606, p/o A-607 | p/o Rail Assy |
| O-606. 19 | | Same as O-606, p/o A-607 | p/o Rail Assy |
| O-606. 20 | | Same as O-606, p/o A-607 | p/o Rail Assy |
| O-606. 21 | | Same as O-606, p/o A-608 | p/o Rail Assy |
| O-606. 22 | | Same as O-606, p/o A-608 | p/o Rail Assy |
| O-606. 23 | | Same as O-606, p/o A-608 | p/o Rail Assy |
| O-606. 24 | | Same as O-606, p/o A-609 | p/o Rail Assy |
| O-606. 25 | | Same as O-606, p/o A-609 | p/o Rail Assy |
| O-606. 26 | | Same as O-606, p/o A-609 | p/o Rail Assy |
| O-606. 27 | | Same as O-606, p/o A-610 | p/o Rail Assy |
| O-606. 28 | | Same as O-606, p/o A-610 | p/o Rail Assy |
| O-606. 29 | | Same as O-606, p/o A-610 | p/o Rail Assy |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|----------------------|
| O-607 | Shop Manufacture | SHAFT, roller: monel, cold drawn; 21/64 in. lg by 17/32 in. diam o/a; CBTL part/dwg NL-900985-1; p/o A-601 | p/o Rail Assy |
| O-607. 1 | | Same as O-607; p/o A-601 | p/o Rail Assy |
| O-607. 2 | | Same as O-607, p/o A-601 | p/o Rail Assy |
| O-607. 3 | | Same as O-607, p/o A-602 | p/o Rail Assy |
| O-607. 4 | | Same as O-607, p/o A-602 | p/o Rail Assy |
| O-607. 5 | | Same as O-607, p/o A-602 | p/o Rail Assy |
| O-607. 6 | | Same as O-607, p/o A-603 | p/o Rail Assy |
| O-607. 7 | | Same as O-607, p/o A-603 | p/o Rail Assy |
| O-607. 8 | | Same as O-607, p/o A-603 | p/o Rail Assy |
| O-607. 9 | | Same as O-607, p/o A-604 | p/o Rail Assy |
| O-607. 10 | | Same as O-607, p/o A-604 | p/o Rail Assy |
| O-607. 11 | | Same as O-607, p/o A-604 | p/o Rail Assy |
| O-607. 12 | | Same as O-607, p/o A-605 | p/o Rail Assy |
| O-607. 13 | | Same as O-607, p/o A-605 | p/o Rail Assy |
| O-607. 14 | | Same as O-607, p/o A-605 | p/o Rail Assy |
| O-607. 15 | | Same as O-607, p/o A-606 | p/o Rail Assy |
| O-607. 16 | | Same as O-607, p/o A-606 | p/o Rail Assy |
| O-607. 17 | | Same as O-607, p/o A-606 | p/o Rail Assy |
| O-607. 18 | | Same as O-607, p/o A-607 | p/o Rail Assy |
| O-607. 19 | | Same as O-607, p/o A-607 | p/o Rail Assy |
| O-607. 20 | | Same as O-607, p/o A-607 | p/o Rail Assy |
| O-607. 21 | | Same as O-607, p/o A-608 | p/o Rail Assy |
| O-607. 22 | | Same as O-607, p/o A-608 | p/o Rail Assy |
| O-607. 23 | | Same as O-607, p/o A-608 | p/o Rail Assy |
| O-607. 24 | | Same as O-607, p/o A-609 | p/o Rail Assy |
| O-607. 25 | | Same as O-607, p/o A-609 | p/o Rail Assy |
| O-607. 26 | | Same as O-607, p/o A-609 | p/o Rail Assy |
| O-607. 27 | | Same as O-607, p/o A-610 | p/o Rail Assy |
| O-607. 28 | | Same as O-607, p/o A-610 | p/o Rail Assy |
| O-607. 29 | | Same as O-607, p/o A-610 | p/o Rail Assy |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|-----------------------------|
| P-601 | N17-C-71408-5333 | CONNECTOR, PLUG, ELECTRICAL: 1 contact, male, round; straight type; BNC connector; 31/32 in. lg, 9/16 in. diam o/a; RF connector, 50 ohms nominal impedance; constant frequency impedance; cylindrical shape, brass, silver pl; locking type; teflon insert; 0.206 in. diam max cable opening; NAVY dwg RE49F246; MIL type UG-88/U | Connector to J-1303 in RFA |
| P-602 | N17-C-99999-1179 | CONNECTOR, PLUG, ELECTRICAL: one contact; one mating end; male, style 12 Ref Dwg Group 206, 52 ohms nominal impedance; plastic dielectric; round, 90° angle shape; 1-7/32 in. lg by 1-5/8 in. wd o/a dimen; w/inclosing brass shell, silver pl; polarized; locking type, 5/8 in. -24 thd coupling nut, w/ cable clamp; RF connector; CARO part/dwg 18750 | Connector to J-1304 in RFA |
| P-603 | | Same as P-601 | Connector to J-1305 in RFA |
| P-604 | N17-C-800956-126 | CAP, PLATE: ceramic body w/tin pl beryllium copper grip; fits 9/16 in. diam cap; CNA type SPP-9 | Connector to J-1306 in RFA |
| P-605 | N17-C-800646-201 | CAP, PLATE: ceramic body w/tin pl beryllium copper grip; fits 3/8 in. diam cap; CNA type SPP-3 | Connector to J-1107 in LLRM |
| P-606 | | Same as P-605 | Connector to J-1108 in LLRM |
| P-607 | | Same as P-601 | Connector to J-2928 in RFO |
| P-608 | | Same as P-605 | Connector to J-503 in MVPS |
| P-609 | N17-C-71108-5314 | CONNECTOR, PLUG, ELECTRICAL: 1 contact, female, rd, straight type; 1-1/32 in. lg, 3/4 in. diam, o/a dimen; RF connector, 50 ohms nominal impedance; cylindrical shape, brass, silver pl; locking type; teflon insert; 0.206 in. diam max cable opening; per MIL-C-3608; MIL type UG-89/U | RF Output to Receiver |
| P-610 | N17-C-71414-1801 | CONNECTOR, PLUG, ELECTRICAL: 1 contact, male, round, straight type; 1-3/4 in. lg, 13/16 in. diam, o/a dimen; RF connector, 52 ohms nominal impedance; cylindrical shape, brass, silver pl; locking type; teflon insert; NAVY dwg RE49F569; MIL type UG-536/U | RF Output |
| Z-601 | N17-S-50965-9117 | FILTER, RADIO INTERFERENCE: 125v RMS, 22 amp RMS min, 60 cps; internal voltage drop at rated load less than 0.20v RMS; continuous duty; hermetically sealed; capable of operating in ambient temp of -20° C to +60° C with a relative humidity of 95% at +50° C; 3-5/16 in. lg excluding term, 2 in. wd max, 7/8 in. h o/a dimen; two no. 8-32 thd stud w/solder lug term located 1 at each end diagonally opposite each other; two 3/16 in. diam mtg holes spaced 2-15/16 in. c to c; CBTL part/dwg NL-901570-1 | RF Filter |
| Z-602 | | Same as Z-601 | RF Filter |
| Z-603 | N17-S-50977-5856 | FILTER, RADIO INTERFERENCE: 125v RMS, 9.0 amps RMS min, 60 cps; internal voltage drop at rated load less than 0.20v RMS; continuous duty; hermetically sealed; capable of operating in ambient temp of -20° C to +65° C with a relative humidity of 95% at +50° C; 2-3/4 in. lg excluding term, 1-3/4 in. wd, 13/16 in. h o/a dimen; two no. 8-32 thd stud term w/nut & | RF Filter |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|---------------------------------|
| Z-603 (cont) | | lockwasher located 1 at each end diagonally opposite each other; two 3/16 in. diam mtg holes spaced 2-3/8 in. c to c; CBTL part/dwg NL-901567-1 | |
| Z-604 | | Same as Z-603 | RF Filter |
| 701-799 | F16-R-400984-104 | MOUNTING, MT-1423/SRT: (Rack, Electrical Equipment): steel; enameled finish; grey front panel; o/a dimen 24-37/64 in. lg, 16-1/8 in. wd, 11-1/8 in. h; base blocks are discarded, assembled w/shock mounts at installation; contains 2 air blower assys and 3 air filters; wired; acts as AC input term for equipment; incl air duct for directing air to equipment; used as base mount for CABINET, ELECTRICAL EQUIPMENT, CY-1571/SRT, CY-1572/SRT, CY-1573/SRT; p/o AN/SRT-14, 15, 16; CBTL part/dwg NL-981791-14 | |
| B-701 | N17-B-21188-654 | BLOWER: centrifugal vane; electric motor operated; non-portable; guarded; motor 1/30 hp, 3300 rpm, 50/60 cyc, single ph, 115v AC; 9-1/4 in. lg by 6-3/8 in. wd by 5-15/16 in. h o/a; 128 cfm at 3300 rpm; single speed, off-on toggle switch; direct drive; CW; steel, painted dark grey; pedestal mtg; wheel is dynamically balanced; CCBN model DRPR type KS-3505A-CW; CBTL part/dwg NL-981176-12-1; c/o B-701A, O-701 and impeller housing | General Ventilation |
| B-701A | N17-M-55257-3910 | MOTOR, ALTERNATING CURRENT: capacitor-induction motor; 115v, 50/60 cyc, single ph, 49.5 w approx; 1/30 hp, single takeoff, 3300 rpm, reversible in rotation; closed frame; ambient temp minus 20° C to plus 65° C, 25° C temp rise for continuous duty; shaft flatted on two sides, 90° apart; 4-5/16 in. lg excluding shaft, 3-3/8 in. diam; 0.3125 in. diam shaft, shaft extends 1-1/4 in. from frame; four flexible wire lead term; mtd by half section motor clamp, 1-13/16 in. radius, two 5/16 in. diam holes spaced 4-13/32 in. c to c; CCBN type no. S2R-AC2 Series 94; CBTL part/dwg NL-982727-3; p/o B-701 | Drive for B-701 |
| B-702 | N17-B-21188-653 | BLOWER: centrifugal vane; electric motor operated; non-portable; guarded; motor 1/30 hp, 3300 rpm, 50/60 cyc, single ph, 115v AC; 9-1/4 in. lg by 6-3/8 in. wd by 5-15/16 in. h o/a; 128 cfm at 3300 rpm; single speed, off-on toggle switch; direct drive; CCW; steel, painted dark grey; pedestal mtg; wheel is dynamically balanced; CCBN model DRPR type KS-3505A-CCW; CBTL part/dwg NL-981176-12-2; c/o B-702A, O-702, and impeller housing | General Ventilation |
| B-702A | | Same as B-701A; p/o B-702 | Drive for B-702 |
| C-701 | N16-C-49981-9914 | CAPACITOR, FIXED, PAPER DIELECTRIC: one section; case style no. 20, MBCA Ref Dwg Group 1; 4 mf, +20%, -10% tolerance; 220v AC, hermetically sealed metal case; case dimen excluding term, 5-1/32 in. lg, 1-3/8 in. diam; two solder lug type term, 9/16 in. h, located on top, spaced 1/2 in. c to c; castor oil impregnated; castor oil filled; no internal ground connections; clamp mtg; CSF type 53P, Cat no. C53P4, outline dwg no. S-3-311, part no. P-17332 | Split Phase Capacitor for B-701 |
| C-702 | | Same as C-701 | Split Phase Capacitor for B-702 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--|
| E-701 | For Reference Only | BOARD, link: melamine glass sheet per spec BuShips 17P25 (SHIPS); four solder lug type term; without barriers; o/a dimen 4-3/4 in. lg, 1 in. wd, 31/32 in. h; two 0.221 in. diam mtg holes, 4-1/4 in. mtg c to c; marked E-701 and 1, 2, 3, 4; incl link strips; CBTL part/dwg NL-981213-1 | Series-Parallel on Parallel Connection for Heaters |
| E-702 | N17-B-77892-7550 | TERMINAL BOARD: molded melamine board; nine double screw type term; barrier type; o/a dimen 4-11/16 in. lg, 1-1/8 in wd, 1/2 in. h; four 0.175 in. diam mtg holes, 4-3/8 in. by 27/64 in. mtg/c; each term incl nickel pl brass eyelet, term screws nickel pl; CJC part No. 9-141B | Connections for Blowers and Heaters |
| E-703 | Low Failure Item | INSULATOR, plate; neoprene, grade 2501 med soft; 4-5/8 in. lg, 2 in. h, 3/16 in. thk; CCCX; CBTL part/dwg NL-981198-1 | Liner for Clamp Assy |
| E-704 | | Same as E-703 | Liner for Clamp Assy |
| H-701 | Procured on demand by nearest Naval Shore Supply Activity | CLAMP, coupling: stainless steel, 1 bolt employed; clamping diam 3-9/16 in. to 4-1/2 in. ; 3/4 in. wd; approx 4-3/4 in. h; CZB type QS200-M64S | Clamps Flexible Coupling to Air Filter and Blower |
| H-702 | | Same as H-701 | Clamps Flexible Coupling to Air Filter and Blower |
| H-703 | | Same as H-701 | Clamps Flexible Coupling to Air Filter and Blower |
| H-704 | | Same as H-701 | Clamps Flexible Coupling to Air Filter and Blower |
| H-705 | Low Failure Item | CLAMP ASSEMBLY: air duct; incl metal clamp and 13 oz nylon stitched canvas duct; rectangular shape; 2 in. lg, 1-3/4 in. wd approx, 5-7/16 in. h; CBTL part/dwg NL-982923-12 | Connects Blower to Vent |
| H-706 | | Same as H-705 | Connects Blower to Vent |
| HR-701 | N17-H-60027-9421 | HEATING ELEMENT, ELECTRICAL: 115v, 150 w, 1.8 amp; chrome steel sheath; two screw type term; dimen, excluding projecting term, 7 in. lg, 1-1/2 in. wd, 15/32 in. thk; two 1/4 in. mtg slots, 6-1/4 in. c to c; CG Cat no. 2A338, dwg no. K-5204191 G6 | Low Temperature Cabinet Heater |
| HR-702 | | Same as HR-701 | Low Temperature Cabinet Heater |
| HR-703 | | Same as HR-701 | Low Temperature Cabinet Heater |
| HR-704 | | Same as HR-701 | Low Temperature Cabinet Heater |
| O-701 | N17-I-19006-5184 | IMPELLER, FAN, CENTRIFUGAL: multiblade; forward curve blades; steel; cad pl; single wd; 30 blades; CW; o/a dimen 3-13/16 in. diam by 3.0 in. wd; single inside hub, 1.0 in. lg, 0.312 in. bore; mtd with two no. 1/4-20 set screws; CCBN part no. AO-702-CW, dwg no. KC-9767; CBTL part/dwg NL-982726-12-2; p/o B-701 | Impeller for B-701 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--------------------------------------|
| O-702 | N17-I-19006-5286 | IMPELLER, FAN, CENTRIFUGAL: multiblade; forward curve blades; steel; cad pl; single wd; 30 blades; CCW; o/a dimen, 3-13/16 in. diam, by 3.0 in. wd; single inside hub, 1.0 in. lg, 0.312 in. bore; mtd with two no. 1/4-20 set screws; CCBN part no. AO-701-CCW, dwg no. KC-9767; CBTL part/dwg NL-982726-12-4; p/o B-702 | Impeller for B-702 |
| O-703 | For Replacement Use G42-C-20721-50 | FILTER, AIR CONDITIONING: permanent; cloth no. 16 mesh 0.013 wire aluminum screen; 11-1/4 in. lg, 6-3/4 in. h, 0.013 in. thk; eighteen 0.140 in. mtg holes; CBTL part/dwg NL-981351-1 | Bottom Screening |
| O-704 | | Same as O-703 | Bottom Screening |
| O-705 | For Replacement Use G42-C-20763-136 | FILTER, AIR CONDITIONING: permanent; monel wire cloth no. 6 mesh 0.032 diam screen; 13-9/16 in. lg, 5-3/4 in. h; eighteen 9/64 in. diam mtg holes; CBTL part/dwg NL-981516-2 | Panel Screening |
| O-706 | N17-C-794001-186 | CLEANER ELEMENT, air: oil wetted type; steel container with bronze screen cloth; 4-7/8 in. lg, 3-9/16 in. OD; replaceable; one 1-5/16 in. lg, 7/8 in. wd wing nut soldered to 3-3/32 in. lg shaft, has 1/4 in. -28 thd 3/4 in. at one end; four no. 11 (0.191) drill holes equi-spaced on 2-3/8 in. diam BC; CBEN catalog no. 1-ST modified; CBTL part/dwg NL-980953-2 | Air Filter |
| O-707 | | Same as O-706 | Air Filter |
| O-708 | | Same as O-706 | Air Filter |
| O-709 | N17-C-99999-1192 | COUPLING, SHAFT, FLEXIBLE: neoprene tube insert; 4-1/16 in. ID, 2-3/8 in. wd; 1/16 in. wall thickness; CBTL part/dwg NL-982362-1-1 | Couples Blower to Air Filter |
| O-710 | | Same as O-709 | Couples Blower to Air Filter |
| 1001-1299 | F16-M-42274-2541 | MODULATOR, RADIO, MD-229/SRT: emission type as indicated in MBCA Ref Dwg Grp 5 incl AI, A3, FL; amplitude modulation 65 w audio output; frequency modulation 1000 cyc frequency shift; for audio modulator 100 to 5000 cyc frequency response ± 1 db; 600 ohms input impedance, 1000 ohms and 8000 ohms output impedance; external and self-contained power supplies, 115v AC, 60 cyc, single ph and DC voltages of +500v, +300v, -12v, -24v, -220v; o/a dimen 25-1/4 in. lg, 16 in. wd, 8-21/32 in. h; acts as modulator for AN/SRT-14, 15 and 16 and is used as driver for AN/SRT-15 and 16; contains an antenna tuning unit by-pass transfer circuit; incl electronic keyer; provides only switching function for F4 emission (input facsimile); CBTL part/dwg NL-900438-14 | |
| C-1001 | For Replacement Use N16-C-19781-5626 | CAPACITOR, FIXED, ELECTROLYTIC: 1 section, 25 mf, 25v DCW; per spec JAN-C-62; JAN type CE63C250F | Coupling J-1106 to T-1003 |
| C-1002 | N16-C-20179-5441 | CAPACITOR, FIXED, ELECTROLYTIC: 1 section, 100 mf, 15v DCW; per spec JAN-C-62; JAN type CE63C101E | By-Pass Microphone Voltage Supply |
| C-1003 | N16-C-53204-4089 | CAPACITOR, FIXED, PAPER DIELECTRIC: 2 sections, each section 100,000 mmf +20% -10%; 600v DCW; per spec JAN-C-25; JAN type CP53B4FF104V | AGC Line By-Pass |
| C-1003A | | p/o C-1003 | ACG Line By-Pass |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|-------------------------------------|
| C-1003B | | p/o C-1003 | AGC Line By-Pass |
| C-1004 | N16-C-42765-4884 | CAPACITOR, FIXED, PAPER DIELECTRIC: 10,000 mmf $\pm 20\%$; 400v DCW, per spec JAN-C-91; JAN type CN30E103M | Coupling V-1001 to V-1002A |
| C-1005 | | Same as C-1004 | Coupling V-1002B to V-1013A |
| C-1006 | | Same as C-1004 | Squelch Coupling V-1002B to V-1008A |
| C-1007 | For Replacement Use N16-C-47293-9453 | CAPACITOR, FIXED, PAPER DIELECTRIC: 500,000 mmf $+20\%$ -10% ; 200v DCW; per spec JAN -C-25; JAN type CP53B1EC504V | Cathode By-Pass V-1004B |
| C-1008 | N16-C-48808-9150 | CAPACITOR, FIXED, PAPER DIELECTRIC: 1.0 mf $+20\%$ -10% ; 100v DCW, per spec JAN-C-25; JAN type CP53B1FB105V | Decoupling to V-1014 |
| C-1009 | N16-C-44285-6258 | CAPACITOR, FIXED, PAPER DIELECTRIC: 50,000 mmf $\pm 20\%$; 400v DCW; per spec JAN-C-91; JAN type CN43E503M | Decoupling V-1002B to V-10140 |
| C-1010 | N16-C-31797-5484 | CAPACITOR, FIXED, MICA DIELECTRIC: 2000 mmf $\pm 5\%$; 500v DCW; per spec JAN-C-5; JAN type CM30A202J | Coupling V-1008A to V-1004A |
| C-1011 | | Same as C-1009 | Coupling V-1008A to V-1008B |
| C-1012 | | Same as C-1009 | Coupling V-1008 to CR-1002 |
| C-1013 | | Same as C-1008 | Squelch Storage Cond. |
| C-1014 | | Same as C-1007 | Filter Squelch Bias Line |
| C-1015 | | Same as C-1004 | Coupling Z-1001 to V-1002B |
| C-1016 | | Same as C-1004 | Coupling V-1003A and B |
| C-1017 | For Replacement Use N16-C-42740-5575 | CAPACITOR, FIXED, PAPER DIELECTRIC: 10,000 mmf $\pm 20\%$; 1000v DCW; per spec JAN-C-25; JAN type CP29A1EG103M | Coupling V-1003B to V-1005A |
| C-1018 | | Same as C-1017 | Coupling V-1003B to V-1005B |
| C-1019 | N16-C-49948-9355 | CAPACITOR, FIXED, PAPER DIELECTRIC: 4.0 mf $\pm 10\%$; 100v DCW; per spec JAN-C-25; JAN type CP54B1EB405K | Anti Sparking K-1101 Contacts |
| C-1020 | N16-C-27181-4391 | CAPACITOR, FIXED, MICA DIELECTRIC: 33 mmf $\pm 5\%$; 500v DCW; per spec JAN-C-5; JAN type CM20A330J | Coupling V-1017B to V-1017A |
| C-1021 | | Same as C-1020 | Coupling V-1017A to V-1017B |
| C-1022 | For Replacement Use N16-C-30109-3806 | CAPACITOR, FIXED, MICA DIELECTRIC: 470 mmf $\pm 5\%$; 500v DCW; per spec JAN-C-5; JAN type CM20A471J | Keyer Wave Shaping |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|---------------------|---|--|--------------------------------|
| C-1023 | | Same as C-1010 | Keyer Wave Shaping |
| C-1024 | N16-C-31085-3679 | CAPACITOR, FIXED, MICA DIELECTRIC: 1000 mmf $\pm 5\%$; 500v DCW; per spec JAN-C-5; JAN type CM30A102J | Keyer Wave Shaping |
| C-1025 | N16-C-32193-2480 | CAPACITOR, FIXED, MICA DIELECTRIC: 3000 mmf $\pm 5\%$; 500v DCW; per spec JAN-C-5; JAN type CM30A302J | Keyer Wave Shaping |
| C-1026 | N16-C-32641-6343 | CAPACITOR, FIXED, MICA DIELECTRIC: 4700 mmf $\pm 5\%$; 500v DCW; per spec JAN-C-5; JAN type CM35E472J | Keyer Wave Shaping |
| C-1027 | | Same as C-1024 | Phase Shifter V-1020 |
| C-1028 | | Same as C-1024 | Phase Shifter V-1020 |
| C-1029 | N16-C-45805-6260 | CAPACITOR, FIXED, PAPER DIELECTRIC: 100,000 mmf $\pm 20\%$; 400v DCW; per spec JAN-C-91, JAN type CN43E104M | Coupling V-1020A to V-1020B |
| C-1030 | N16-C-53697-7220 | CAPACITOR, FIXED, PAPER DIELECTRIC: 2 sections; 500,000 mmf - 500,000 mmf $+20\%$ - 10% ; 600v DCW; per spec JAN-C-25; JAN type CP67B4EF504V | |
| C-1030A | | p/o C-1030 | Coupling V-1020B to V-1020A |
| C-1030B | | p/o C-1030 | Coupling V-1020 Output |
| C-1031 | For Replacement Use N16-C-27656-2601 | CAPACITOR, FIXED, MICA DIELECTRIC: 51 mmf $\pm 5\%$; 500v DCW; per spec JAN-C-5; JAN type CM20A510J | Cathode By-Pass V-1020 |
| C-1032 | For Replacement Use N16-C-29133-4001 | CAPACITOR, FIXED, MICA DIELECTRIC: 180 mmf $\pm 10\%$; 500v DCW; per spec JAN-C-5; JAN type CM20A181K | Cathode By-Pass V-1020 |
| C-1033 | | Not Used | |
| C-1034 | N16-C-20981-7841 | CAPACITOR, FIXED, ELECTROLYTIC: 1 section, 1500 mf, 25v DCW; per spec JAN-C-62; JAN type CE51B152F | Filter 12v Power Supply |
| C-1035 | | Same as C-1034 | Filter 12v Power Supply |
| C-1036 | N16-C-20119-1001 | CAPACITOR, FIXED, ELECTROLYTIC: 1 section; 80 mf, 450v DCW; per spec JAN-C-62; JAN type CE51E800R | Filter 250v Power Supply |
| C-1037 | N16-C-53448-1600 | CAPACITOR, FIXED, PAPER DIELECTRIC: 2 sections, 250,000 mmf - 250,000 mmf, $+20\%$ - 10% ; 600v DCW; per spec JAN-C-25; JAN type CP53B4FF254V | |
| C-1037A | | p/o C-1037 | By-Pass Cathode V-1011A |
| C-1037B | | p/o C-1037 | By-Pass Grid V-1011 |
| C-1038 | N16-C-47321-9602 | CAPACITOR, FIXED, PAPER DIELECTRIC: 500,000 mmf $\pm 20\%$; 600v DCW; per spec JAN-C-25; JAN type CP53B1FF504V | By-Pass Cathode V-1011B |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|-------------------------------------|
| C-1039 | For Replacement Use N16-C-47297-3107 | CAPACITOR, FIXED, PAPER DIELECTRIC: 0.5 mf +20% -10%, 600v DCW; per spec JAN-C-25; JAN type CP55B1FF504V | Time Delay to Plate and Grid V-1023 |
| C-1040 | N16-C-49981-9980 | CAPACITOR, FIXED, PAPER DIELECTRIC: 4 mf +20%-10%; 600v DCW; per spec JAN-C-25; JAN type CP40C2FF405V | 250v Regulated Supply By-Pass |
| C-1041 | N16-C-46371-9896 | CAPACITOR, FIXED, PAPER DIELECTRIC: 250,000 mmf +20%-10%; 600v DCW; per spec JAN-C-25; JAN type CP53B2EF254V | Coupling V-1004A to Z-1001 |
| C-1042 | N16-C-21942-8247 | CAPACITOR, FIXED, ELECTROLYTIC: 2 sections; 35-35 mf; 400v DCW; per spec JAN-C-62, JAN type CE52C350Q | |
| C-1042A | | p/o C-1042 | Filter |
| C-1042B | | p/o C-1042 | Filter |
| C-1043 | | Same as C-1004 | Cathode By-Pass V-1003A |
| C-1044 | | Same as C-1024 | Divider Compensator |
| C-1045 | For Replacement Use N16-C-47321-9567 | CAPACITOR, FIXED, PAPER DIELECTRIC: 0.5 mf +40%-15%; 1000v DCW; per spec JAN-C-25; JAN type CP63B1DG504X | Filter to V-1003B |
| C-1046 | | Same as C-1004 | Keyer Wave Shaping |
| C-1047 | N16-C-43117-1701 | CAPACITOR, FIXED, PAPER DIELECTRIC: 20,000 mmf ±10%; 600v DCW; per spec JAN-C-91; JAN type CN42E203K | Keyer Wave Shaping |
| C-1048 | N16-C-43493-7988 | CAPACITOR, FIXED, PAPER DIELECTRIC: 30,000 mmf ±10%; 400v DCW; per spec JAN-C-91; JAN type CN42E303K | Keyer Wave Shaping |
| C-1049 | | Same as C-1009 | Keyer Wave Shaping |
| C-1050 | N16-C-17069-2651 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 100 mmf ±2%; 500v DCW; per spec JAN-C-20A; JAN type CC26UJ101G | By-Pass V-1018 Plate #1 |
| C-1051 | | Same as C-1050 | By-Pass V-1018 Plate #2 |
| C-1052 | | Same as C-1004 | By-Pass V-1013B Plate #2 |
| C-1053 | | Same as C-1004 | Side Tone Coupling |
| CR-1001 | N17-R-99999-0867 | RECTIFIER, METALLIC: selenium; designed for single ph full wave bridge circuit, MBCA Ref Dwg Group 23-1; input data, per leg, new, 16v RMS, aged, 17v RMS, max 18v RMS, single ph; output 12.5v DC, 0.5 amps DC max bridge type rectification; round shape, o/a dimen excluding term 2-3/4 in. h by 3-3/8 in. diam; one mtg stud with 5/16 in. -18 thd, 5/8 in. lg; salt spray test per BuShips 16E4(RE); tropicalization per JAN-T-152; built to spec MIL-R-15736; CFT type no. 106D7737; CBTl part/dwg NL-900760-1 | Rectifier 12v |
| CR-1002 | N16-T-51734-10 | CRYSTAL UNIT, RECTIFYING: germanium diode; per spec JAN-1-A; JAN type 1N34A | Squelch Diode |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|-------------------------|
| E-1001 | | Not Used | |
| E-1002 | | Not Used | |
| E-1003 | N16-R-88777-5342 | ATTENUATOR, VARIABLE: resistive type, unbalanced "LL" MBCA Ref Dwg Group 16, composition resistors; input impedance 600 ohms, output impedance 0 to 600 ohms; 2 w each section; attenuation continuously variable; 1-3/16 in. lg excluding shaft, bushing and term, 1-1/16 in. diam; 6 solder lug type term; mtd by 3/8 in. -32 NEF-2 thd bushing 3/8 in. lg; "C" taper; MBCA Ref Dwg Group 3; CBZ style JJA 6011 P3040; CBTL part/dwg NL-982615-1 | Sidetone Volume Control |
| E-1004 | Low Failure Item | TERMINAL BOARD: melamine glass sheet; thirty-two split type solder term; 6-3/4 in. lg, 2 in. wd, 3/32 in. thk excluding term; four 0.144 diam mtg holes on 6-7/16 in. by 1-3/8 in. mtg/c; CBTL part/dwg NL-900404-2 | Component Mounting |
| E-1005 | Low Failure Item | TERMINAL BOARD: melamine resin type GMG; twenty-eight split type solder term; 6 in. lg, 1-7/8 in. wd, 15/16 in. thk o/a dimen; four 0.144 in. diam mtg holes on 5-5/8 in. by 1-3/8 in. mtg/c; CBTL part/dwg NL-900400-2 | Component Mounting |
| E-1006 | Low Failure Item | TERMINAL BOARD: melamine resin type GMG; twenty-eight split type solder term; 6 in. lg, 1-7/8 in. wd, 15/16 in. thk o/a dimen; four 0.144 in. diam mtg holes on 5-5/8 in. by 1-3/8 in. mtg/c; CBTL part/dwg NL-900398-2 | Component Mounting |
| E-1007 | Low Failure Item | TERMINAL BOARD: melamine resin type GMG; twenty-four split type solder term; 5-1/4 in. lg, 1-7/8 in. wd, 15/16 in. thk o/a dimen; four 0.144 in. diam mtg holes on 4-7/8 in. by 1-3/8 in. mtg/c; CBTL part/dwg NL-900394-2 | Component Mounting |
| E-1008 | Low Failure Item | TERMINAL BOARD: melamine resin type GMG; twenty-two split type solder term; 4-7/8 in. lg, 1-7/8 in. wd, 15/16 in. thk o/a dimen; four 0.144 in. diam mtg holes on 4-1/2 in. by 1-3/8 in. mtg/c; CBTL part/dwg NL-900390-2 | Component Mounting |
| E-1009 | Low Failure Item | TERMINAL BOARD: melamine glass sheet; thirty-four split type solder term; 7-7/8 in. lg, 1-7/8 in. wd, 3/32 in. thk excluding term; four 0.144 in. diam mtg holes on 7-1/2 in. by 1-3/8 in. mtg/c; CBTL part/dwg NL-900408-2 | Component Mounting |
| E-1010 | Low Failure Item | TERMINAL BOARD: melamine resin type GMG; nine split type solder term; six on one side, three on other; 2-3/4 in. lg, 1-5/8 in. wd, 3/4 in. thk o/a dimen; two 0.149 in. diam mtg holes, 2 in. mtg/c; CBTL part/dwg NL-900385-2 | Component Mounting |
| E-1011 | Low Failure Item | TERMINAL BOARD: ceramic; eight turret lug type term, one common term; 7/8 in. lg, 1/2 in. wd, 9/16 in. h; two no. 3-48 tapped mtg holes, 29/64 in. mtg/c; CBY part 12855; CBTL part/dwg NL-960103-1-1 | Component Mounting |
| E-1012 | | Same as E-1011 | Component Mounting |
| E-1013 | Shop Manufacture | TERMINAL BOARD: ceramic or melamine type GMG; eight turret lug type term, one common term; o/a dimen 1-1/2 in. lg, 1-5/32 in. wd, 9/16 in. h; two no. 3-48 tapped mtg spacers, 29/64 in. mtg/c; CBY part 13025; CBTL part/dwg NL-960103-1-3 | Component Mounting |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description. | Locating Function |
|------------------|---|--|---------------------------------|
| E-1014 | Low Failure Item | TERMINAL BOARD: melamine resin type GMG; sixteen split type solder term; 2-1/2 in. lg, 1-1/2 in. wd, 23/32 in. thk o/a dimen; two stand-offs for mtg no. 4-40 NC-2 tapped holes; CBTL part/dwg NL-900856-1 | Component Mounting |
| E-1015 | N16-K-702781-120 | KNOB: round; black thermosetting phenolic, dull finish; for 1/4 in. diam shaft; two no. 8-32 by 3/16 in. lg set screws; w/ pointer; 1-1/16 in. diam, 5/8 in. thk, 1-5/32 in. lg; brass, nickel pl insert; 15/32 in. depth of shaft hole; fluted; CMI part no. RE10F479C type A; CBTL part/dwg NCP-20-1-11-2 | For Sidetone Volume Control |
| E-1015.1 | | Same as E-1015 | For Keying Rate Switch |
| E-1015.2 | | Same as E-1015 | For Space-Mark Operation Switch |
| E-1016 | N16-K-702781-117 | KNOB: round; black thermosetting phenolic; dull finish; for 1/4 in. diam shaft; two no. 8-32 by 1/4 in. lg set screws; w/ pointer; 1-1/2 in. diam, 7/8 in. thk, 1-5/8 in. lg o/a; brass, nickel pl insert; 9/16 in. depth of shaft hole; fluted; CMI part no. RE10F479C type B; CBTL part/dwg NCP-20-1-13-2 | For Remote-Local Selector |
| E-1016.1 | | Same as E-1016 | For Service Selector Switch |
| E-1017 | N16-K-702781-115 | KNOB: round; black thermosetting phenolic; dull finish; for 1/4 in. diam shaft; two no. 6-32 by 1/8 in. lg set screws; w/ pointer; 13/16 in. diam, 9/16 in. thk, 7/8 in. lg o/a; brass, nickel pl insert; 7/16 in. depth of shaft hole; fluted; CMI part no. RE10F479F type G; CBTL part/dwg NCP-20-1-18-2 | For Squelch Trig. Control |
| E-1017.1 | | Same as E-1017 | For Gain to Clip Control |
| E-1017.2 | | Same as E-1017 | For % Mod. Control |
| E-1018 | Low Failure Item | BALL, electrode: brass, cad pl; spherical with stud for mtg; 15/16 in. lg, 0.375 in. diam; one no. 6-32 NC2 thd stud 7/16 in. lg for mtg; CBTL part/dwg NL-981436-1 | Safety Device For T-1004 |
| E-1018.1 | | Same as E-1018 | Safety Device for T-1004 |
| E-1019 | Shop Manufacture | TERMINAL BOARD: material of board melamine glass sheet, per MIL-P-15037B type GMG; incl 14 split lug type term; not barrier type; o/a dimen 3-11/16 in. lg by 2-3/8 in. wd by 3/32 in. thk excluding term; four 0.169 in. diam mtg holes spaced 3-3/16 in. c to c in lg by 1-5/8 in. c to c in wd; CBTL part/dwg NL-901086-1 | Component Mounting |
| E-1020 | Low Failure Item | INSULATION SLEEVING, ELECTRICAL: rigid; laminated phenolic, form Tr, type LTS-E4 amended no. 3, per spec MIL-P-79; 1.406 in. ID; 0.11 in. wall thickness, 4.438 in. lg o/a; w/laminated phenolic top cover; CBTL part/dwg NL-981216-1 | u/w C-1034 |
| E-1021 | | Same as E-1020 | u/w C-1035 |
| E-1022 | | Same as E-1020 | u/w C-1036 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|----------------------------------|
| F-1001 | N17-F-14690-5825 | FUSE, CARTRIDGE: 3 amps, 250v; time delay, 150% for 0-1 minute, 300% for 6 seconds minimum; 1-1/2 in. lg, 0.406 in. diam; per spec MIL-F-15160A; MIL type FO9G3R00B | T-1001 Protection |
| F-1002 | N17-F-14690-5800 | FUSE, CARTRIDGE: 2 amps, 250v; time delay, 150% for 0-1 minute, 300% for 6 seconds minimum; 1-1/2 in. lg, 0.406 in. diam; per spec MIL-F-15160A; MIL type FO9G2R00B | T-1002 Protection |
| H-1001 | N17-C-99999-489 | CLAMP, tube: stainless steel; c/o strap w/clip and bracket; one hole in bracket for no. 10 machine screw for mtg; 1.625 in. diam by 7/8 in. h o/a; CAIS type 926-H-5 | u/w C-1034 |
| H-1001.1 | | Same as H-1001 | u/w C-1035 |
| H-1001.2 | | Same as H-1001 | u/w C-1036 |
| H-1001.3 | | Same as H-1001 | u/w V-1006 |
| H-1001.4 | | Same as H-1001 | u/w V-1007 |
| H-1002 | Low Failure Item | HINGE: piano; aluminum; superset finish; 6-25/32 in. lg by 1-1/16 in. wd o/a; non-removable pin; 8 mtg holes total, 4 holes 0.128 in. diam for rivets, 4 holes 0.169 in. diam for machine screws; CBTL part/dwg NL-900426-2 | For Access Door |
| H-1003 | Low Failure Item | SLIDE, chassis: right hand; c/o inner and outer slide, front latch, ball spacer w/stainless steel balls, and pin stop; corrosion resisting steel, electropolish finish; 23-1/8 in. lg closed, 1-5/8 in. h, 9/16 in. wd o/a; nine 0.169 in. diam mtg holes, countersunk, spaced 2-1/2 in. c to c; two 1/4 in. -28 NF-2 thd mtg holes, 1 in. c to c located on back end; CBTL part/dwg NL-900037-12-1; same as H-502 | For LLRM Chassis |
| H-1004 | Low Failure Item | SLIDE, chassis: left hand, c/o inner and outer slide, front latch, ball spacer w/stainless steel balls, and pin stop; corrosion resisting steel, electropolish finish; 23-1/8 in. lg closed, 1-5/8 in. h, 9/16 in. wd o/a; nine 0.169 in. diam mtg holes, countersunk, spaced 2-1/2 in. c to c, two 1/4 in. -28 NF-2 thd mtg holes spaced 1 in. c to c located on back end; CBTL part/dwg NL-900037-12-2; same as H-501 | For LLRM Chassis |
| H-1005 | N16-C-300798-866 | CLAMP, tube: stainless steel; c/o strap w/clip and bracket; 1 hole in bracket for no. 10 machine screw for mtg; 1-3/8 in. diam by 3/4 in. h o/a; CAIS type 926-C | u/w V-1009 |
| H-1006 | | Same as H-1005 | u/w V-1010 |
| I-1001 | G17-L-6806-130 | LAMP, GLOW: neon, 105-125v, 1/25 w; MBCA Ref Dwg Group 7, single contact, bayonet candleabra base, T-3-1/4, clear, orange-red glow; 1-3/16 in. max o/a h; CG type NE-51; same as I-503 | 250v Regulated Power Supply "ON" |
| J-1101 | N17-C-99999-2015 | CONNECTOR, RECEPTACLE, ELECTRICAL: consists of double row of 8 sliding contacts per row, male, flat; 2-7/16 in. lg, 7/8 in. wd, 9/16 in. h excluding contacts & term; w/partially enclosed plastic shell; polarized; non-locking; 5 amp, 600v DC; mtd by two 0.125 in. diam holes in diagonal corners, spaced 2.024 in. c to c in lg and 0.460 in. c to c in wd; CPH type 26-159-16; same as P-401 | Chassis Connector to J-603 |
| J-1102 | | Same as J-1101 | Chassis Connector to J-604 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--|
| J-1103 | | Same as J-1101 | Chassis Connector to J-605 |
| J-1104 | N17-J-39253-3043 | JACK, telephone: 1-1/4 in. lg, 3/4 in. diam o/a excluding lugs; J3-2B contact arrangement; 3/8 in. -32 thd mtg bushing 5/16 in. lg; per spec JAN-J-641; JAN type JJ-089 | Local Headphone |
| J-1105 | N17-J-39435-6234 | JACK, telephone: o/a dimen 1-7/32 in. lg, 15/16 in. wd, 49/64 in. h o/a; J2-2A contact arrangement; mts by 3/8 in. -32 thd mtg bushing with one washer and one hex nut; CMA no. SCA2B; per spec JAN-J-641; JAN type JJ-033 | Carbon Microphone Input |
| J-1106 | N17-C-72252-1131 | CONNECTOR, RECEPTACLE, ELECTRICAL: 5 contacts; 1 mating end, 5 size 16 contacts, female, rated at 22 amps, 700v DCW; 500v RMS; phenolic dielectric; box receptacle, straight shape; 15/16 in. lg by 1-3/16 in. sq o/a dimen; w/inclosing shell, aluminum, cad pl, corrosion resistant; polarized; locking type with 7/8 in. -20 coupling thd; four 0.120 in. diam mtg holes located on sq mtg flange with 29/32 in. mtg/c; per spec MIL-C-5015; MIL type AN3102A-14S-5S | Handset Input |
| J-1107 | N17-I-59705-1251 | INSULATOR, FEEDTHRU: brass; silver pl finish; 15/16 in. lg, 5/8 in. diam o/a; CNA type XS-7 modified; CBTL part/dwg NL-900095-1; same as J-503 | Medium Voltage Input |
| J-1108 | | Same as J-1107 | LLRM Output |
| J-1109 | N17-C-73301-5363 | CONNECTOR, RECEPTACLE, ELECTRICAL: 14 contacts, female, round; polarized; straight type; 1-1/4 in. lg, 7/16 in. wd, 27/32 in. h o/a; rectangular shape; molded melamine; two no. 4-40 NC-2 thd screws, 0.937 in. mtg/c; socket contacts phosphor bronze, gold pl; CCK type MRE-14S-G | Main Chassis Connector for Preampfier, Mates with J-1111 |
| J-1110 | N17-C-99999-1196 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female; straight type; phone type connector; dielectric red nylon; 29/32 in. lg, 5/16 in. wd incl hex coupling nut o/a dimen; 1000v peak; w/inclosing shell, cylindrical shape, brass, nickel pl; not polarized; 1 hole, 1/4 in. diam; 1/4 in. -32 thd on receptacle for mating w/coupling nut; CARO part 225A; same as J-504 | +250v Regulated Power Supply Test Point |
| J-1111 | N17-C-73301-5358 | CONNECTOR, RECEPTACLE, ELECTRICAL: 14 contacts, male, round, no. 20 AWG; polarized; straight type; 1-1/4 in. lg, 7/16 in. wd, 25/32 in. h o/a dimen; rectangular shape body, molded melamine; two no. 4-40 NC-2 thd screws, 0.937 in. mtg/c; contacts brass, gold pl; CCK type MRE-14P-G | Preampfier Plug to Main Chassis, Mates with J-1109 |
| K-1101 | N17-R-99999-0849 | RELAY, ARMATURE: three sets of form "C" contacts; 3PST; transfer function; 150v peak, 5 amp make, 3 amps break; one winding, 24v DC; one term per contact, two term on coil, one side of coil grounded; continuous duty capable of 0-20 cps without chatter; 1-7/16 in. lg by 1-3/4 in. h by 1-1/8 in. wd o/a dimen; two no. 4-40 tapped holes on 0.656 in. by 0.375 in. mtg/c; CBTL part/dwg NL-900098-1 | Keying Relay |
| K-1102 | N17-R-99999-0856 | RELAY, ARMATURE: contact arrangement 1C, SPDT, 2 amp; one winding, 5000 ohms resistance, 24v DC; one term per contact, two term on coil; continuous duty, hermetically sealed; 2-3/8 in. lg by 1-1/2 in. wd by 1-1/2 in. d o/a dimen; mtd by means of two no. 6-32 thd studs 1-3/8 in. c to c, approx 1/2 in. lg; CSI type 5RJ5000G | Transfer Function Relay |
| K-1103 | | Not Used | |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|------------------------------|
| K-1104 | N17-R-65145-7979 | RELAY, ARMATURE: contact arrangement form 2AX2A4B1C, MBCA Ref dwg Group 4, single break, AC-DC, 4 amp; 1 inductive winding, 300 ohms DC; 24v DC operating voltage; 19 term on contact, 2 term on coil; continuous duty; 2-1/4 in. lg by 1-1/8 in. wd by 1-13/16 in. h o/a dimen; 2 no. 6-32 tapped holes, 3/4 in. c to c; open frame, impregnated coil, contacts rated at 150 w with above current; CRY type J, part no. N-49556; per BuShips spec no. 40T9; CBTL part/dwg NL-981101-1 | LLRM Transfer |
| K-1105 | | Not Used | |
| K-1106 | N17-R-65140-8165 | RELAY, ARMATURE: non pile-up, SPST, normally closed, double-break, 140 ma DC; 1 inductive winding, 24v DC operating voltage, 160 ohms; 2 term on contact, 2 term on coil; continuous duty; open type 3 in. lg by 2-1/8 in. h by 1-3/4 in. wd o/a dimen; mtd by means of bracket, melamine per spec 17P25 (ships) type GMG; CLR part no. 1602-14N; per BuShips spec no. 40T9; CBTL part/dwg NL-981026-1 | LLRM Section Shorting |
| K-1107 | N17-R-64922-3701 | RELAY, ARMATURE: contact arrangement form 1A1B2C, MBCA Ref Dwg Group 4, single break, AC-DC, one uncoded contact form C rated 200v DC, one uncoded contact form C rated 3v AC, one uncoded contact form C rated at 0.02 amp, one uncoded contact form C rated at 0.001 amp, code 24 contacts form A and B rated at 4.0 amps, 150 w; 1 winding, 1 inductive winding DC, 100 ohms resistance, 12.0v DC operating voltage; 10 term on contacts, 2 term on coils; continuous duty; o/a dimen 2-1/4 in. lg, 1-1/8 in. wd, 1-1/2 in. h; 2 no. 6-32 tapped holes, 3/4 in. c to c; impregnated coil, open frame type; CRY type J, part no. B-49556; per BuShips spec no. 40T9; CBTL part/dwg NL-981021-1 | Phone Keying Relay |
| L-1001 | N16-R-29238-4351 | REACTOR: filter choke; one section; 5 hy, 0.200 amp; 168 ohms DC resistance; 1850v RMS test voltage; hermetically sealed steel case; o/a dimen 2-15/16 in. diam by 3-25/32 in. lg; four 0.177 in. diam mtg holes on 2-3/8 in. mtg/c, on 3-1/32 in. sq mtg flange; two solder lug type term on insulators 1/2 in. lg, 7/16 in. diam, located on mtg surface; CUT dwg no. F-3600-A, Rev. 2; per spec MIL-T-27; CBTL part/dwg NL-980616-1 | Filter 250v Regulated Supply |
| L-1002 | | Not Used | |
| L-1003 | | Not Used | |
| L-1004 | | Not Used | |
| L-1005 | N16-R-29877-5775 | REACTOR: swinging choke; one section; 0.1 hy min o/a inductance, 0.1 amp min DC, 0.4 hy max o/a inductance, 1.5 amp max DC; 1.25 ohms DC resistance; 1500v RMS test voltage; hermetically sealed steel case; o/a dimen 3-1/4 in. lg, 3 in. wd, 4-1/2 in. h; four no. 8-32 thd by 15/32 in. lg mtg studs on 2-1/4 in. by 2-1/2 in. mtg/c; two solder lug type term on insulators 15/32 in. lg by 7/16 in. diam o/a, located on mtg surface; CUT part/dwg F-3596-1; per spec Mil-T-27; CBTL part/dwg NL-980617-1 | Filter 12 v Power Supply |
| O-1001 | N16-S-34520-3864 | SHIELD, ELECTRON TUBE: brass, nickel pl; cylindrical shape; 1-3/8 in. lg, 0.958 in. diam o/a dimen; bayonet mtg; per spec JAN-S-28A; JAN type TS102U01 | u/w XV-1001 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|----------------------|
| O-1002 | N16-S-34576-6514 | SIELD, ELECTRON TUBE: brass, nickel pl; cylindrical shape; 1-15/16 in. lg; 1.093 in. diam o/a dimen; bayonet mtg; per spec JAN-S-28A; JAN type TS103U02 | u/w XV-1002 |
| O-1003 | | Same as O-1002 | u/w XV-1003 |
| O-1004 | | Same as O-1002 | u/w XV-1004 |
| O-1005 | | Same as O-1002 | u/w XV-1005 |
| O-1006 | N17-C-800646-201 | CLIP, ELECTRICAL; grid-plate style 9, MBCA Ref Dwg Group 37; phosphor bronze; 1-1/8 in. lg, 5/8 in. wd, 9/16 in. h o/a; ceramic insulation; 1 solder lug type term; 3/8 in. when opened; retains tension under high heat conditions, used as tube plate clip; CJA no. 36002, part/dwg K-36002 | u/w XV-1006 |
| O-1007 | | Same as O-1006 | u/w XV-1007 |
| O-1008 | | Same as O-1002 | u/w XV-1008 |
| O-1009 | | Not Used | |
| O-1010 | | Not Used | |
| O-1011 | | Same as O-1002 | u/w XV-1011 |
| O-1012 | N16-S-34557-8351 | SIELD, ELECTRON TUBE: brass, nickel pl; cylindrical shape; 1-3/4 in. lg, 0.958 in. diam o/a dimen; bayonet mtg; per spec JAN-S-28A, JAN type TS102U02 | u/w XV-1012 |
| O-1013 | | Same as O-1001 | u/w XV-1013 |
| O-1014 | | Same as O-1001 | u/w XV-1014 |
| O-1015 | | Same as O-1002 | u/w XV-1015 |
| O-1016 | | Same as O-1001 | u/w XV-1016 |
| O-1017 | | Same as O-1002 | u/w XV-1017 |
| O-1018 | | Same as O-1001 | u/w XV-1018 |
| O-1019 | | Same as O-1002 | u/w XV-1019 |
| O-1020 | | Same as O-1002 | u/w XV-1020 |
| O-1021 | N16-S-34607-6039 | SIELD, ELECTRON TUBE: brass, nickel pl; cylindrical shape; 2-1/4 in. lg, 0.958 in. diam o/a dimen; bayonet mtg; per spec JAN-S-28A; JAN type TS102U03 | u/w XV-1021 |
| O-1022 | | Same as O-1021 | u/w XV-1022 |
| O-1023 | | Same as O-1002 | u/w XV-1023 |
| O-1024 | Procured on demand by nearest Naval Shore Supply Activity | RETAINER, bearing: lower; c/o rectangular, corrosion resisting steel, electropolish finish ball spacer w/twelve 0.125 in. diam stainless steel balls, self-retained; 10.844 in. lg, 1/4 in. wd, 0.125 in. thk o/a dimen; CCCS dwg no. A-9019.9-2 (Revision no. 3); p/o H-1003; same as O-508 | p/o Chassis Slide |
| O-1024.1 | | Same as O-1024; p/o H-1004 | p/o Chassis Slide |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--------------------------------------|
| O-1025 | Procured on demand by nearest Naval Shore Supply Activity | RETAINER, bearing: upper; c/o rectangular, corrosion resisting steel, electropolish finish ball spacer w/twelve 0.125 in. diam stainless steel balls, self-retained; 11.344 in. lg, 1/4 in. wd, 0.125 in. thk o/a dimen; CCCS dwg no. A-9019.9-1 (Revision no. 3); p/o H-1003; same as O-506 | p/o Chassis Slide |
| O-1025.1 | | Same as O-1025; p/o H-1004 | p/o Chassis Slide |
| O-1026 | N17-S-99999-0590 | SPRING, HELICAL COMPRESSION: cylindrical; stainless steel, passivate finish; 1/2 in. lg by 1/4 in. diam; 5 RH turns, 0.035 in. diam open ends ground; per MIL-W-6713 cond B, type 302; CBTL part/dwg NL-983629-1 | p/o S-1101 |
| O-1027 | Low Failure Item | SPRING, HELICAL COMPRESSION: 0.032 in. diam music wire per NAVY spec 22W11C; 3/8 in. h, 1/2 in. diam o/a; 3-1/2 turns, RH or LH wound; first and last 3/4 turns are flat; cad pl; CBTL part/dwg NL-900018-1; u/w H-1003; same as O-507 | Stop Button Spring for Chassis Slide |
| O-1027.1 | | Same as O-1027; u/w H-1004 | Stop Button Spring for Chassis Slide |
| O-1028 | Low Failure Item | SPRING: loop type; for latch, 0.038 in. diam corrosion resisting steel spring wire; 2-1/2 in. lg, 11/16 in. h o/a; one end semi-hook type, one end open; irregular shape; CBTL part/dwg NL-900991-1; p/o H-1003; same as O-509 | p/o Chassis Slide |
| O-1028.1 | | Same as O-1028; p/o H-1004 | p/o Chassis Slide |
| O-1029 | Low Failure Item | SPRING: flat type; beryllium copper alloy no. 25 cond 1/4 H, 0.025 in. thk strip per MIL-C-947, silver pl; one no. 3-48 thd mtg hole on term; 1-3/8 in. lg, 15/16 in. h; CBTL part/dwg NL-900142-1; p/o S-1104; same as O-510 | For Contact in S-1104 |
| R-1001 | N16-R-49598-811 | RESISTOR, FIXED, COMPOSITION: 120 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF121K | Voltage Divider Microphone Supply |
| R-1002 | | Same as R-1001 | Voltage Divider Microphone Supply |
| R-1003 | N16-R-49967-811 | RESISTOR, FIXED, COMPOSITION: 1,500 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF152K | Voltage Divider T-1003 Output |
| R-1004 | N16-R-50696-811 | RESISTOR, FIXED, COMPOSITION: 180,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF184K | Voltage Divider T-1003 Output |
| R-1005 | N16-R-49688-811 | RESISTOR, FIXED, COMPOSITION: 270 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF271K | Cathode Bias V-1001 |
| R-1006 | N16-R-50481-457 | RESISTOR, FIXED, COMPOSITION: 47,000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42BF473K | Plate Resistor V-1001 |
| R-1007 | For Replacement Use N16-R-50355-498 | RESISTOR, FIXED, COMPOSITION: 18,000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42BF183K | Screen Resistor V-1001 |
| R-1008 | N16-R-50337-528 | RESISTOR, FIXED, COMPOSITION: 15,000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42BF153K | Screen Resistor V-1001 |
| R-1009 | | Same as R-1004 | Grid Resistor V-1002A |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|-----------------------------------|
| R-1010 | N16-R-50012-811 | RESISTOR, FIXED, COMPOSITION: 2,200 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF222K | Cathode Resistor V-1002A |
| R-1011 | N16-R-50786-811 | RESISTOR, FIXED, COMPOSITION: 390,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF394K | Plate Resistor V-1002A |
| R-1012 | N16-R-50741-126 | RESISTOR, FIXED, COMPOSITION: 270,000 ohms, $\pm 5\%$; 2 w; per spec JAN-R-11; JAN type RC42BF274J | Voltage Divider V-1013A, V-1014 |
| R-1013 | N16-R-50975-811 | RESISTOR, FIXED, COMPOSITION: 1.0 meg ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF105K | AGC Filter Resistor V-1013A |
| R-1014 | N16-R-88179-4410 | RESISTOR, VARIABLE: composition element; 1 section, 500,000 ohms, $\pm 10\%$; 2.25 w nominal power rating at 100% CW rotation, 2 w at 50% CW rotation; special taper, CBZ "U" taper, 75000, 190000, 315000, 435000 ohms resistance at 20, 40, 60, 80% rotations respectively; 3 solder lug type term; metal case, enclosed, 1-1/16 in. diam, 9/16 in. d; round corrosion resistant metal shaft, 1/4 in. diam, 3/4 in. lg, normal torque, contact arm insulated, no "off" position; mtd by bushing 3/8 in. -32 NEF-2 thd, 3/8 in. lg; CBZ type JU5041-P3048 type J | Squelch Level |
| R-1015 | N16-R-87849-4404 | RESISTOR, VARIABLE: composition element; 1 section, 50,000 ohms, $\pm 10\%$; 2.25 w nominal power rating at 100% CW rotation, 2 w at 50% CW rotation; special taper, CBZ "A" taper, 500, 2500, 10000, 32500 ohms resistance at 20, 40, 60, 80% rotations respectively; 3 solder lug type term; metal case, enclosed, 1-1/16 in. diam, 9/16 in. d; round, corrosion resistant metal shaft, 1/4 in. diam, 3/4 in. lg, normal torque; contact arm insulated, no "off" position; mtd by bushing 3/8 in. -32 NEF-2 thd, 3/8 in. lg; CBZ type JA5031-P3048 type J | Gain to Clip Control |
| R-1016 | N16-R-50373-421 | RESISTOR, FIXED, COMPOSITION: 22,000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42BF223K | Plate Resistor V-1008A |
| R-1017 | N16-R-50353-431 | RESISTOR, FIXED, COMPOSITION: 18,000 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF183J | Clipper Voltage Divider V-1014 |
| R-1018 | N16-R-50480-811 | RESISTOR, FIXED, COMPOSITION: 47,000 ohms, $\pm 10\%$, 1/2 w; per spec JAN-R-11; JAN type RC20BF473K | Isolating Clipper Resistor V-1014 |
| R-1019 | N16-R-50678-811 | RESISTOR, FIXED, COMPOSITION: 150,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF154K | Clipper Symmetry V-1014 |
| R-1020 | N16-R-87519-4580 | RESISTOR, VARIABLE: composition element; 1 section, 5000 ohms, $\pm 10\%$; 2.25 w nominal power rating at 100% CW rotation, 2 w at 50% CW rotation; special taper, CBZ "U" taper, 750, 1900, 3150, 4350 ohms at 20, 40, 60, 80% rotation respectively; 3 solder lug type term; metal case, enclosed, 1-1/16 in. diam; 9/16 in. d; round, screwdriver-slotted, metal shaft, corrosion resistant, 1/4 in. diam, 5/8 in. lg, normal torque, w/shaft locking device; contact arm insulated, no "off" position; mtd by bushing 3/8 in. -32 NEF-2 thd, 1/2 in. lg; CBZ type JLU 5021-SD4040L type J | Clipper Symmetry V-1014 |
| R-1021 | | Same as R-1013 | Grid Resistor V-1004A |
| R-1022 | | Same as R-1008 | Plate Resistor V-1008B |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|-------------------------------|
| R-1023 | | Same as R-1008 | Plate Resistor V-1008B |
| R-1024 | N16-R-50634-231 | RESISTOR, FIXED, COMPOSITION: 100,000 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30BF104K | Grid Resistor V-1008B |
| R-1025 | | Same as R-1010 | Cathode Resistor V-1008 |
| R-1026 | N16-R-50165-811 | RESISTOR, FIXED, COMPOSITION: 5600 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF562K | Cathode Resistor V-1002B |
| R-1027 | | Same as R-1006 | Plate Resistor V-1004A |
| R-1028 | N16-R-50237-811 | RESISTOR, FIXED, COMPOSITION: 8200 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF822K | Cathode Resistor V-1013B |
| R-1029 | | Same as R-1013 | Plate Resistor V-1013B |
| R-1030 | N16-R-50552-811 | RESISTOR, FIXED, COMPOSITION: 68000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF683K | Loading Resistor CR-1002 |
| R-1031 | N16-R-49427-811 | RESISTOR, FIXED, COMPOSITION: 47 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF470K | Parasitic Suppressor Resistor |
| R-1032 | N16-R-87679-4270 | RESISTOR, VARIABLE: composition element; 1 section, 10000 ohms, $\pm 10\%$; 2.25 w nominal power rating at 100% CW rotation, 2 w at 50% CW rotation; special taper, CBZ "U" taper, 1500, 3800, 6300, 8700 ohms resistance at 20, 40, 60, 80% rotations respectively; 3 solder lug type term, metal case enclosed, 1-1/16 in. diam 9/16 in. d; round, corrosion resistant metal shaft, 1/4 in. diam, 3/4 in. lg, normal torque; contact arm insulated, no "off" positions; mtd by bushing 3/8 in. -32 NEF-2 thd, 3/8 in. lg; CBZ type JU1031-P3048 type J | Percent Modulation Set |
| R-1033 | N16-R-49922-811 | RESISTOR, FIXED, COMPOSITION: 1000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF102K | Cathode Resistor V-1004A |
| R-1034 | | Same as R-1011 | Plate Resistor V-1002B |
| R-1035 | N16-R-50822-811 | RESISTOR, FIXED, COMPOSITION: 470,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF474K | Grid Resistor V-1003B |
| R-1036 | N16-R-50652-231 | RESISTOR, FIXED, COMPOSITION: 120,000 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30BF124K | Cathode Resistor V-1003B |
| R-1037 | | Same as R-1010 | Cathode Resistor V-1003B |
| R-1038 | | Same as R-1036 | Plate Resistor V-1003B |
| R-1039 | | Same as R-1035 | Grid Resistor V-1005B |
| R-1040 | | Same as R-1035 | Grid Resistor V-1005A |
| R-1041 | | Same as R-1003 | Cathode Resistor V-1004B |

ORIGINAL

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---|
| R-1042 | N16-R-50310-480 | RESISTOR, FIXED, COMPOSITION: 12,000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42BF123K | Cathode Resistor V-1015B |
| R-1043 | N16-R-50418-457 | RESISTOR, FIXED, COMPOSITION: 33,000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42BF333K | Cathode Resistor V-1005B |
| R-1044 | | Same as R-1043 | Cathode Resistor V-1005A |
| R-1045 | N16-R-65735-4716 | RESISTOR, FIXED, WIRE WOUND: 160 ohms, $\pm 5\%$; 15 w; per spec MIL-R-26A; MIL type RW20G161 | Cathode Resistor for Dumpers V-1006, V-1007 |
| R-1046 | N16-R-49238-811 | RESISTOR, FIXED, COMPOSITION: 10 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF100K | Protective Resistor V-1007 |
| R-1047 | | Same as R-1046 | Protective Resistor V-1006 |
| R-1048 | N16-R-88009-4505 | RESISTOR, VARIABLE: composition element; 1 section, 100,000 ohms, $\pm 10\%$; 2.25 w nominal power rating at 100% CW rotation, 2 w at 50% CW rotation; special taper, CBZ "U" taper, 15000, 38000, 63000, 87000 ohms resistance at 20, 40, 60, 80% rotations respectively; 3 solder lug type term; metal case, enclosed, 1-1/16 in. diam, 9/16 in. d; round, corrosion resistant metal shaft, slotted for screwdriver adj; 1/4 in. diam by 5/8 in. lg, normal torque, w/shaft locking device; contact arm insulated, no "off" position; mtd by bushing, 3/8 in. -32 NEF-2 thd 1/2 in. lg; CBZ type JLU 1041-SD4040L type J; same as R-413 | High Level Mod. Audio Level |
| R-1049 | | Same as R-1018 | High Level Mod. Audio Level |
| R-1050 | N16-R-50651-811 | RESISTOR, FIXED, COMPOSITION: 120,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF124K | High Level Mod. Audio Level |
| R-1051 | N16-R-50533-935 | RESISTOR, FIXED, COMPOSITION: 62,000 ohms, $\pm 5\%$; 2 w; per spec JAN-R-11; JAN type RC42BF623J | Voltage Divider Fixed Bias |
| R-1052 | N16-R-50336-811 | RESISTOR, FIXED, COMPOSITION: 15,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R 11; JAN type RC20BF153K | Voltage Divider Fixed Bias |
| R-1053 | | Same as R-1011 | Dropping Resistor I-1001 |
| R-1054 | N16-R-49787-101 | RESISTOR, FIXED, COMPOSITION: 510 ohms, $\pm 5\%$; 2 w; per spec JAN-R-11; JAN type RC42BF511J | Bleeder 12v Power Supply |
| R-1055 | N16-R-50283-529 | RESISTOR, FIXED, COMPOSITION: 10,000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42BF103K | Bleeder 250v Regulated Supply |
| R-1056 | | Same as R-1055 | Bleeder 250v Regulated Supply |
| R-1057 | | Same as R-1055 | Bleeder 250v Regulated Supply |
| R-1058 | | Same as R-1055 | Bleeder 250v Regulated Supply |
| R-1059 | | Same as R-1031 | Current Balance V-1010 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--|
| R-1060 | | Same as R-1031 | Current Balance V-1010 |
| R-1061 | N16-R-50202-511 | RESISTOR, FIXED, COMPOSITION: 6,800 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42BF682K; same as R-519 | Voltage Divider V-1011 |
| R-1062 | | Same as R-1061 | Voltage Divider V-1011 |
| R-1063 | N16-R-50166-508 | RESISTOR, FIXED, COMPOSITION: 5600 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42BF562K | Voltage Divider V-1011 |
| R-1064 | | Same as R-1063 | Voltage Divider V-1011 |
| R-1065 | | Same as R-1035 | Plate Resistor V-1011A |
| R-1066 | | Same as R-1035 | Plate Resistor V-1011B |
| R-1067 | For Replacement Use N16-R-66303-4543 | RESISTOR, FIXED, WIRE WOUND: 6,300 ohms, $\pm 5\%$; 15 w; per spec MIL-R-26A; MIL type RW20G632 | Voltage Divider V-1011 |
| R-1068 | N16-R-90868-2997 | RESISTOR, VARIABLE: wire wound; 2,500 ohms, $\pm 10\%$; 2 w; per spec JAN-R-19; JAN type RA20A1SD252KK | Output Voltage Control 250v Regulated Supply |
| R-1069 | For Replacement Use N16-R-66425-2766 | RESISTOR, FIXED, WIRE WOUND: 12,000 ohms, $\pm 5\%$; 22 w; per spec MIL-R-26A; MIL type RW21G123 | Voltage Divider V-1011 |
| R-1070 | | Same as R-1013 | Voltage Divider V-1012 |
| R-1071 | | Same as R-1030 | Dropping Resistor V-1012 |
| R-1072 | N16-R-50633-811 | RESISTOR, FIXED, COMPOSITION: 100,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF104K | Voltage Divider 250v Regulated Supply |
| R-1073 | | Same as R-1019 | Voltage Divider 250v Regulated Supply |
| R-1074 | | Same as R-1072 | Voltage Divider Keying Voltage |
| R-1075 | | Same as R-1035 | Terminating Re- sistor Keyer Input |
| R-1076 | | Same as R-1072 | Isolating Resistor V-1015 |
| R-1077 | | Same as R-1031 | Parasitic Sup- pressor V-1015 |
| R-1078 | | Same as R-1031 | Parasitic Sup- pressor V-1015 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|-------------------------------------|
| R-1079 | N16-R-87849-4590 | RESISTOR, VARIABLE: composition element; 1 section, 50,000 ohms, $\pm 10\%$; 2.25 w nominal power rating at 100% CW rotation, 2 w at 50% CW rotation; special taper, CBZ "U" taper, 7500, 19000, 31500, 43500 ohms resistance at 20, 40, 60, 80% rotations respectively; 3 solder lug type term; metal case, enclosed, 1-1/16 in. diam, 9/16 in. d; round, screw-driver-slotted, metal shaft, corrosion resistant, 1/4 in. diam, 5/8 in. lg, normal torque, w/shaft locking device; contact arm insulated, no "off" position; mtd by bushing 3/8 in. -32 NE F-2 thd, 1/2 in. lg; CBZ type JLU 5031-SD4040L type J | Neutral-Polar Keying Mark Threshold |
| R-1080 | | Same as R-1031 | Parasitic Suppressor V-1015 |
| R-1081 | | Same as R-1031 | Parasitic Suppressor |
| R-1082 | | Same as R-1079 | Polar Keying Space Threshold |
| R-1083 | N16-R-50516-811 | RESISTOR, FIXED, COMPOSITION: 56,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF563K | Voltage Divider V-1016 |
| R-1084 | N16-R-50632-431 | RESISTOR, FIXED, COMPOSITION: 100,000 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF104J | Voltage Divider V-1016 |
| R-1085 | N16-R-50650-431 | RESISTOR, FIXED, COMPOSITION: 120,000 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF124J | Grid Resistor V-1017 |
| R-1086 | N16-R-51038-811 | RESISTOR, FIXED, COMPOSITION: 1.3 megohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF185K | Coupling Resistor V-1017 |
| R-1087 | For Replacement Use N16-R-66342-7291 | RESISTOR, FIXED, WIRE WOUND: 8,000 ohms, $\pm 5\%$; 15 w; per spec MIL-R-26A; MIL type RW20G802 | Dropping Resistor V-1022 |
| R-1088 | N16-R-50515-751 | RESISTOR, FIXED, COMPOSITION: 56,000 ohms, $\pm 5\%$; 1 w; per spec JAN-R-11; JAN type RC30BF563J | Plate Resistor V-1017 |
| R-1089 | N16-R-50281-431 | RESISTOR, FIXED, COMPOSITION: 10,000 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF103J | Cathode Resistor V-1017 |
| R-1090 | N16-R-50713-431 | RESISTOR, FIXED, COMPOSITION: 220,000 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF224J | Grid Resistor V-1017 |
| R-1091 | | Same as R-1086 | Coupling Resistor V-1017 |
| R-1092 | | Same as R-1088 | Plate Resistor V-1017 |
| R-1093 | | Same as R-1035 | Voltage Divider V-1017 |
| R-1094 | N16-R-50993-811 | RESISTOR, FIXED, COMPOSITION: 1.2 megohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF125K | Isolating Resistor V-1017 |
| R-1095 | N16-R-50741-811 | RESISTOR, FIXED, COMPOSITION: 270,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF274K | Voltage Divider V-1018 |
| R-1096 | | Same as R-1048 | Keyer Output Zero Adjust |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|----------------------------------|
| R-1097 | | Same as R-1035 | Isolating Resistor V-1018 |
| R-1098 | N16-R-87679-4540 | RESISTOR, VARIABLE: composition element; 1 section, 10,000 ohms, $\pm 10\%$; 2.25 w nominal power rating at 100% CW rotation, 2 w at 50% CW rotation; special taper, CBZ "U" taper, 1500, 3800, 6300, 8700 ohms resistance at 20, 40, 60 and 80% rotations respectively; 3 solder lug type term; metal case, enclosed, 1-1/16 in. diam, 9/16 in. d; round, corrosion resistant metal shaft, slotted for screwdriver adjustment, 1/4 in. diam by 5/8 in. lg, normal torque, w/shaft locking device; contact arm insulated, no "off" position; mtd by bushing 3/8 in. -32 NEF-2 thd 1/2 in. lg; CBZ type JLU 1031-SD4040L type J; same as R-411 | Negative Clipping Level |
| R-1099 | | Same as R-1031 | Parasitic Sup- pressor |
| R-1100 | | Same as R-1031 | Parasitic Sup- pressor |
| R-1101 | | Same as R-1031 | Parasitic Sup- pressor |
| R-1102 | N16-R-50479-751 | RESISTOR, FIXED, COMPOSITION: 47,000 ohms, $\pm 5\%$; 1 w; per spec JAN-R-11; JAN type RC30BF473J | Cathode Resistor V-1019 |
| R-1103 | | Same as R-1033 | Cathode Resistor V-1019 |
| R-1104 | | Same as R-1031 | Parasitic Sup- pressor V-1019 |
| R-1105 | N16-R-50400-231 | RESISTOR, FIXED, COMPOSITION: 27,000 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30BF273K | Voltage Divider V-1018 |
| R-1106 | | Same as R-1105 | Voltage Divider V-1018 |
| R-1107 | | Same as R-411 | Positive Clipping Level |
| R-1108 | N16-R-50677-431 | RESISTOR, FIXED, COMPOSITION: 150,000 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF154J | Phase Shift V-1020 |
| R-1109 | N16-R-50839-431 | RESISTOR, FIXED, COMPOSITION: 510,000 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF514J | Phase Shift V-1020 |
| R-1110 | | Same as R-1108 | Phase Shift V-1020 |
| R-1111 | | Same as R-1109 | Phase Shift V-1020 |
| R-1112 | | Same as R-1033 | Feed Back V-1020 |
| R-1113 | N16-R-87419-4350 | RESISTOR, VARIABLE: composition element; 1 section, 2,500 ohms, $\pm 10\%$; 2.25 w nominal power rating at 100% CW rotation, 2 w at 50% CW rotation; special taper, CBZ "U" taper, 375, 950, 1575, 2175 ohms resistance at 20, 40, 60, 80% rotations respectively; 3 solder lug type term; metal case, enclosed, 1-1/16 in. diam 9/16 in. d; round screwdriver slotted, metal | Feed Back Control V-1020 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|-----------------------------|
| R-1113 (cont) | | shaft, corrosion resistant, 1/4 in. diam, 5/8 in. lg, normal torque, w/shaft locking device; contact arm insulated, no "off" position; mtd by bushing 3/8 in. -32 NEF-2 thd 1/2 in. lg; CBZ type JLU 2521-SD4040L type J | |
| R-1114 | N16-R-50517-231 | RESISTOR, FIXED, COMPOSITION: 56,000 ohms, ±10%; 1 w; per spec JAN-R-11; JAN type RC30BF563K | Plate Resistor V-1020 |
| R-1115 | N16-R-50283-231 | RESISTOR, FIXED, COMPOSITION: 10,000 ohms, ±10%; 1 w; per spec JAN-R-11; JAN type RC30BF103K | Plate Resistor V-1020 |
| R-1116 | N17-L-3911-245 | RESISTOR, THERMAL: 120v, 0.026 amps, 3 w; designed for AC/DC use; ballast tube type, glass envelope, clear, filament no. C-7A, S-6 bulb, MBCA Ref Dwg Group 7, 1-13/16 in. lg o/a; candelabra double contact bayonet base for socket mtg; CCCZ type 3S6DC dwg no. 201 | Cathode Resistor V-1020 |
| R-1117 | | Same as R-1013 | Grid Resistor V-1020 |
| R-1118 | N16-R-49661-811 | RESISTOR, FIXED, COMPOSITION: 220 ohms, ±10%; 1/2 w; per spec JAN-R-11; JAN type RC20BF221K | Cathode Resistor V-1020 |
| R-1119 | | Not Used | |
| R-1120 | | RESISTOR, FIXED, WIRE WOUND: 2,800 ohms, ±5%; 15 w; per spec JAN-R-26; JAN type RW20G282 | Dropping Resistor V-1021 |
| R-1121 | | Same as R-1007 | Voltage Divider CR-1002 |
| R-1122 | | Same as R-1031 | Parasitic Suppressor V-1017 |
| R-1123 | | Same as R-1031 | Parasitic Suppressor V-1017 |
| R-1124 | N16-R-49580-811 | RESISTOR, FIXED, COMPOSITION: 100 ohms, ±10%; 1/2 w; per spec JAN-R-11; JAN type RC20BF101K | Cathode Resistor V-1017 |
| R-1125 | | Same as R-1124 | Cathode Resistor V-1017 |
| R-1126 | N16-R-50399-811 | RESISTOR, FIXED, COMPOSITION: 27,000 ohms, ±10%; 1/2 w; per spec JAN-R-11; JAN type RC20BF273K | Voltage Divider V-1001 |
| R-1127 | N16-R-51065-811 | RESISTOR, FIXED, COMPOSITION: 2.2 meg ohms, ±10%; 1/2 w; per spec JAN-R-11; JAN type RC20BF225K | Load Resistor V-1013A |
| R-1128 | | Same as R-1095 | Grid Return V-1008 |
| R-1129 | | Same as R-1013 | Squelch Isolation Resistor |
| R-1130 | | Same as R-1083 | Time Delay |
| R-1131 | | Same as R-1001 | Current Limiting |
| R-1132 | | Same as R-1126 | Voltage Divider |
| R-1133 | | Same as R-1083 | Voltage Divider |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---|
| R-1134 | N16-R-88412-5359 | RESISTOR, VARIABLE: composition element; 1 section, 2.5 megohms, $\pm 20\%$; 2.25 w nominal power rating at 100% CW rotation, 2 w at 50% CW rotation; special taper, CBZ "U" taper, 375000, 950000, 1575000, 2175000 ohms resistance at 20, 40, 60, 80% rotations respectively; 3 solder lug type term; metal case, enclosed, 1-1/16 in. diam, 9/16 in. d; round, screwdriver-slotted, metal shaft, corrosion resistant, 1/4 in. diam, 5/8 in. lg, normal torque, w/shaft locking device; contact arm insulated, no "off" position; mtd by bushing 3/8 in. -32 NEF-2 thd 1/2 in. lg; CBZ type JLU 2552-SD4040L type J | Time Delay Variation |
| R-1135 | N16-R-50094-231 | RESISTOR, FIXED, COMPOSITION: 3,900 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30BF392K | Filter |
| R-1136 | | Same as R-1135 | Filter |
| R-1137 | N16-R-49822-948 | RESISTOR, FIXED, COMPOSITION: 620 ohms, $\pm 5\%$; 2 w; per spec MIL-R-11A; MIL type RC42GF621J | Termination |
| R-1138 | | Same as R-1072 | Suppressor |
| R-1139 | | Same as R-1072 | Suppressor |
| R-1140 | N16-R-50417-811 | RESISTOR, FIXED, COMPOSITION: 33,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF333K | Filter |
| R-1141 | | Same as R-1072 | Side Tone Oscillator Isolation |
| R-1142 | | Same as R-1013 | AGC Filter Resistor V-1013A |
| R-1143 | | Same as R-1035 | Side Tone Coupling |
| R-1144 | | Same as R-1127 | Side Tone Coupling |
| S-1101 | N17-S-99999-0608 | SWITCH, ROTARY: 6 sect, 2 pole, 5 position; solid silver alloy non-shorting contacts; ceramic grade L-3 wafers: 4-15/32 in. lg by 1-1/2 in. max diam o/a dimen excluding shaft and bushing; 2 hole mtg in front; 1 hole for 3/8 in. -32 thd bushing and one 1/8 in. hole for positioning lug; 2 hole mtg in back, spaced 1-1/4 in. apart for no. 4-40 thd screw; 1/4 in. diam round shaft, 13/16 in. lg excluding bushing, w/3/32 in. hole for locking pin; solder lug type term; per BuShips 16S19; CBTL part/dwg NL-900704-2; c/o S-1101A, B, C, D, E and F | Service Selector Switch |
| S-1101A | N17-S-91797-4999 | SWITCH SECTION, ROTARY: 2 pole, 5 position; spaced 30° apart; solid silver alloy non-shorting contacts; ceramic grade L-3 body; solder lug type term; approx 1-1/2 in. diam, 1/16 in. thk excluding term; CCCT type 4M-LW; per spec BuShips 16S19; p/o S-1101 | Front: Control Circuits Rear: Keyer Input Switching |
| S-1101B | | Same as S-1101A; p/o S-1101 | Front: FSO Switching Rear: Buffer & RFO Keying |
| S-1101C | | Same as S-1101A; p/o S-1101 | Front: Keyer Switching Rear: Wobbulator Switching & others |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--|
| S-1101D | | Same as S-1101A; p/o S-1101 | Front: Wobbulator Switching Rear: Side Tone Switching |
| S-1101E | | Same as S-1101A; p/o S-1101 | Front: Mod Switching Rear: Mod Switching |
| S-1101F | | Same as S-1101A; p/o S-1101 | Spare Sections |
| S-1102 | N17-S-74139-4844 | SWITCH, TOGGLE: DPDT; 1 amp/250v, or 3 amp/125v; phenolic body; 2-1/8 in. lg, 1-9/32 in. h, 23/32 in. wd o/a dimen; bat type actuating handle 11/16 in. lg excluding 15/32 in. bushing; locking action; 6 solder lug type term, located in rear; single mtg hole for 15/32 in. -32 thd bushing; per spec JAN-S-23, JAN type ST22N | Microphone Input Connections |
| S-1103 | N17-S-72018-7719 | SWITCH, TOGGLE: SPDT; 1 amp/250v, 3 amp/125 v; phenolic body; 2-1/8 in. lg, 1-9/32 in. h, 23/32 in. wd o/a dimen; bat type actuating handle, excluding 15/32 in. bushing; locking action; 6 solder lug type term located on back; single mtg hole for 15/32 in. -32 thd bushing; per spec JAN-S-23; JAN type ST12D | AGC "On-Off" |
| S-1104 | N17-S-99999-0626 | SWITCH, INTERLOCK: push with snap action cheater; 2 piece door type; DPST, male and female type, beryllium copper alloy strip contact; thermosetting plastic molding body; 1-1/2 in. lg by 1-1/2 in. wd by 1/2 in. thk o/a dimen excluding term posts and push rod; 2 screw type term located on both ends of switch; mtd by means of two 0.128 in. diam countersunk holes spaced 0.875 in. apart; interrupts 24v DC; CBTL part/dwg NL-900059-2; same as S-501 | Interlock Switch |
| S-1105 | | Same as S-1103 | Neutral Polar Selector |
| S-1106 | N17-S-99999-0607 | SWITCH, ROTARY: 1 section, 5 poles, 2 position; spaced 30° apart; solid silver alloy non-shorting contacts; ceramic grade L3 wafer; 1-29/32 in. lg, approx 1-1/2 in. diam o/a; 2 hole mtg, 1 hole for 3/8 in. -32 thd bushing, other hole for 1/8 in. diam positioning lug; flatted 1/4 in. diam round shaft 1/2 in. lg excluding 3/8 in. bushing; solder lug type term; per BuShips 16S19, CBTL part/dwg NL-900705-2 | Remote-Local Selector |
| S-1107 | N17-S-99999-0605 | SWITCH, ROTARY: 1 section, 1 pole, 3 position, spaced 30° apart; solid silver alloy non-shorting contacts; ceramic grade L3 wafer; momentary contacts on each side of a neutral position; 1-25/32 in. lg, approx 1-1/2 in. o/a diam; 2 hole mtg, 1 hole for 3/8 in. -32 thd bushing, other hole for 1/8 in. diam positioning lug; flatted 1/4 in. diam round shaft 1/2 in. lg excluding 3/8 in. bushing; solder lug type term; CCCT 4M-LW; CBTL part/dwg NL-900706-2 | Keyer Test Switch |
| S-1108 | N17-S-54635-2503 | SWITCH, LEVER, PILE-UP: 2 lever position, position 1 momentary, position 2 locking; contact arrangement 2A each position, MBCA Ref Dwg Group 4; 3.0 amp; 3-1/8 in. lg, 7/8 in. wd, 2-1/4 in. h; lever type actuator 1-5/16 in. lg, 3/8 in. diam; 8 solder lug type term; 2 mtg holes countersunk for no. 4-36 machine screw 1-15/16 in. c to c; CRY part no. A-49459 | Test Key |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|--|---|--|
| S-1109 | N17-S-61361-4411 | SWITCH, ROTARY: 1 section; 4 positions max no. of switching positions possible; contact arrangement non-"pile-up" type, 2 moving contacts, 6 fixed contacts, DP4T; non-shorting contacts, solid silver alloy; ceramic insulation grade L4B per JAN-I-10; o/a dimen 1 in. lg, 1-5/8 in. wd, 1-7/8 in. h; bushing mtd, 3/8 in. -32 thd, 3/8 in. lg; flatted shaft, 7/8 in. lg from mtg surface, 1/4 in. diam; solder lug type term, 1/2 in. lg; COC type no. 46882-HIC; CBTL part/dwg NL-981020-1 | Keying Rate Selector |
| S-1110 | N17-S-68852-8221 | SWITCH, SENSITIVE: SPST; 125v AC; 10 amp; phenolic body; o/a dimen excluding actuator, 1-5/8 in. lg, 53/64 in. h, 9/32 in. thk; stainless steel button type actuating plunger 3/32 in. diam, .007 in. max differential, 1/32 in. max pretravel, .025 in. max overtravel; 6 to 10 oz operating force; 3 oz minimum release force; momentary action, normally closed; 2 solder lug type term; four 3/32 in. diam mtg holes spaced 5/8 in. and 1 in. centers; 0.010 in. gap; CATK type 2MC1-1A, Model M; p/o switch assembly; CBTL part/dwg NL-900437-12 | Push to Turn Break Switch |
| T-1001 | N17-T-73816-2689 | TRANSFORMER, POWER, STEP-DOWN AND STEP-UP: hermetically sealed, cold rolled steel case; 110v AC, 50/60 cyc, single ph input; 2 output winding, no. 1 secondary 1000v center-tapped, 0.15 amps, no. 2 secondary 2.5v, 4.75 amps; no. 1 secondary 2000v, no. 2 secondary 1500v insulation; vacuum varnish impregnated; dimen MBCA Ref Dwg Group 12, 4-3/8 in. lg by 4-1/4 in. wd by 4-13/16 in. h; 7 stand-off type term 25/32 in. lg, 13/32 in. diam; mtd by four no. 10-32 thd, 1/2 in. d inserts on 3-9/16 in. mtg/c, MBCA Ref Dwg Group 12; electrostatic shield; "4.5 munsell gray" finish, ceramic-neoprene type term 1/2 in. diam spaced 60° apart on 1-11/16 in. diam B.C. to fit in 2-1/2 in. diam B.C. cutout; CBEY part/dwg no. OD-2585; CBTL part/dwg NL-982185-1 | Rectifier Plate 250v Regulated Supply |
| OR | | | |
| T-1001 | For Replacement use N17-T-73816-2689 until present stock is exhausted then replace with N17-TO77121-8720 | TRANSFORMER, POWER, STEP-DOWN AND STEP-UP: hermetically sealed, cold rolled steel case; primary winding 110v AC, 50/65 cps, single ph input; one secondary winding 1000v RMS center tapped, 225 ma DC; primary working insulation 500v RMS, secondary working insulation 2400v RMS; impregnated; MBCA Ref. Dwg Group 12 dimensions 4-3/8 in. lg, 4-1/4 in. wd, and 4-3/4 in. h; five standoff type terminals 1/2 in. diam spaced 60° apart on 1-11/16 in. diam B.C.; mtd by four no. 10-32 threaded inserts 1/2 in. d on 3-9/16 in. mtg/c. electrostatic shield; per MIL-T-27 spec; CBTL part/dwg #NL-901614-1 | |
| T-1002 | N17-T-70292-7675 | TRANSFORMER, POWER, STEP-DOWN: hermetically sealed, steel case; 110v AC, 50/60 cyc, single ph input; 6 output windings, no. 1 secondary 6.3v at 2.8 amps center tapped, no. 2 secondary 6.3v at 4.25 amps, no. 3 secondary 6.3v at 3.0 amps center tapped, no. 4 secondary 5.0v at 2.0 amps, no. 5 secondary 15.0v at 0.3 amp, no. 6 secondary 17.5v at 1 amp tapped at 16.5v; primary test voltage 1500v RMS, other 1850v RMS; Robertson potting compound; 3-23/32 in. OD by 4-17/32 in. max h o/a dimen, MBCA Ref Dwg Group 12; 17 solder lug type term located on mtg surface, 12 on 2-1/4 in. diam circle, 5 on 1 in. diam circle; four holes 0.201 in. diam on 3 in. mtg/c on 3-3/4 in. max sq mtg plate; electrostatic shield grounded to case; CUT part/dwg.F-3594; per spec MIL-T-27; CBTL part/dwg NL-980606-1 | General Filament & 12v DC Power Supply |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--------------------------------------|
| T-1003 | N17-T-61611-1275 | TRANSFORMER, AUDIO FREQUENCY: input type; primary winding 600 ohms o/a impedance tapped at 35 ohms impedance, secondary 200,000 ohms o/a impedance; 1000v RMS test voltage; hermetically sealed upright tinplate case; o/a dimen MBCA Ref Dwg Group 12 1-1/2 in. lg by 1-1/2 in. wd by 2-3/16 in. h; 18 dbm max audio operating level, 1 to 18.1 primary to secondary turns ratio; 100 to 5000 cyc frequency range, ±1/2 db, not tuned; 5 solder lug type term on standoffs mtd on bottom; mtd by 4 inserts no. 6-32 thd by 3/8 in. d on 15/16 in. by 15/16 in. mtg/c; wax impregnated, shielded; CAVM part/dwg S-537-1; per spec MIL-T-27; CBTL part/dwg NL-980977-1 | Microphone Input |
| T-1004 | N17-T-63057-1001 | TRANSFORMER, AUDIO FREQUENCY: modulation type; 4200 ohms primary impedance, center tapped, secondary no. 1 1000 ohms impedance center tapped, secondary no. 2 10,000 ohms impedance tapped at 8,000 ohms and 9,000 ohms impedance; primary 120 ma DC balanced, secondary no. 1 20 ma balanced, secondary no. 2 140 ma unbalanced; primary insulation test voltage 1500v RMS, secondary no. 1 2100v RMS, secondary no. 2 3700v RMS; hermetically sealed, steel upright case, nickel iron alloy core; o/a dimen 4-1/4 in. wd by 4-3/8 in. lg by 5-3/8 in. h MBCA Ref Dwg Group 12; max audio operating level secondary no. 1 20 w, secondary no. 2 65 w max audio operating level; one secondary in use at a given time; turns ratio primary to secondary no. 1 1 to 0.535, primary to secondary no. 2 1 to 1.63; frequency response 100 to 15000 cyc per sec, ±5 db, not tuned; 10 solder lug type term mtd on stand-off insulators, located on bottom; 4 inserts no. 10-32 thd by 9/16 in. d, 3 in. by 3-1/2 in. c to c; hum balancing construction, wax impregnated, pitch filling, not shielded; CAVM part/dwg 2232-1; per spec MIL-T-27; CBTL part/dwg NL-980978-1 | Output from V-1006, V-1007 |
| T-1005 | N17-T-63458-4551 | TRANSFORMER, AUDIO FREQUENCY: plate coupling type; primary impedance 15,000 ohms, secondary 600 ohms impedance; 8 ma primary rated; 1500v RMS test voltage insulation; hermetically sealed, steel upright case; o/a dimen 1-1/2 in. lg by 1-1/2 in. wd by 2-3/16 in. h; 25 db max audio operating level; 1 to 0.272 primary to secondary ratio of turns; frequency range of 200 to 4500 cyc ±0.5 db, not tuned; 4 solder lug term on standoffs located on bottom; 4 inserts no. 6-32 thd by 3/8 in. d, 15/16 in. by 15/16 in. c to c, MBCA Ref Dwg Group 12; wax filled and impregnated; not shielded; CAVM part/dwg S-2233-1; per spec MIL-T-27; CBTL part/dwg NL-980979-1 | Side Tone Output V-1004 |
| V-1001 | N16-T-75725 | ELECTRON TUBE: pentode; per spec JAN-1A; JAN type 5725 | Audio Amplifier Speech |
| V-1002 | N16-T-75751 | ELECTRON TUBE: dual triode; miniature; per spec JAN-1A; JAN type 5751 | Audio Amplifier Speech |
| V-1003 | | Same as V-1002 | Cathode Follower & Phase Splitter |
| V-1004 | N16-T-75814 | ELECTRON TUBE: dual triode; per spec JAN-1A; JAN type 5814 | Audio Amplifier Speech |
| V-1005 | | Same as V-1004 | Cathode Follower Mod. Drivers |
| V-1006 | N16-T-75933 | ELECTRON TUBE: tetrode; per spec JAN-1A; JAN type 5933 | Power Amplifier, Modulator |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|----------------------------|---|--|-------------------------------|
| V-1007 | | Same as V-1006 | Power Amplifier, Modulator |
| V-1008 | | Same as V-1004 | Squelch |
| V-1009 | N16-T-55446-5 | ELECTRON TUBE: dual diode; per spec MIL-E-1B; JAN type 5R4WGB | Rectifier |
| V-1010 | N16-T-56202 | ELECTRON TUBE: dual triode; per spec JAN-1A; JAN type 6AS7G | Regulator |
| V-1011 | | Same as V-1002 | Regulator Control |
| V-1012 | N16-T-75651 | ELECTRON TUBE: voltage regulator; per spec JAN-1A; JAN type 5651 | Voltage Regulator |
| V-1013 | N16-T-75726 | ELECTRON TUBE: dual diode; per spec JAN-1A; JAN type 5726 | AGC Rectifier |
| V-1014 | | Same as V-1013 | Speech Clipper |
| V-1015 | For Replacement Use N16-T-58240-14 | ELECTRON TUBE: dual triode; per spec JAN-1A; JAN type 6201 | Keyer Circuit |
| V-1016 | | Same as V-1013 | Keyer Circuit |
| V-1017 | | Same as V-1015 | Keyer Circuit |
| V-1018 | | Same as V-1013 | Keyer Circuit |
| V-1019 | | Same as V-1015 | Keyer Circuit |
| V-1020 | | Same as V-1015 | Wien Bridge Osc. |
| V-1021 | N16-T-52001-5 | ELECTRON TUBE: gas diode; per spec JAN-1A; JAN type OB2 | -108v Regulated |
| V-1022 | | Same as V-1021 | +108v Regulated |
| V-1023 | | Same as V-1015 | Transfer Function Circuit |
| XC-1034 | N16-S-63515-4151 | SOCKET, ELECTRON TUBE: 8 contacts, brass, silver pl; octal type; oval; 1-7/8 in. lg, 1-3/8 in. wd, 11/16 in. h excluding term; phenolic dielectric insulator; one piece saddle mtg, bottom mtg; 1-1/8 in. diam chassis hole required, 2 mtg holes, 0.156 in. diam, 1.500 in. c to c; per spec JAN-S-28A; JAN type TS101P01 | Socket for C-1034 |
| XC-1035 | | Same as XC-1034 | Socket for C-1035 |
| XC-1036 | | Same as XC-1034 | Socket for C-1036 |
| XC-1037 thru XC-1041 | | Not Used | |
| XC-1042 | | Same as XC-1034 | Socket for C-1042 |
| XF-1001 | Low Failure Item | FUSEHOLDER: extractor post type; 250v, 30 amp; accommodates 1 fuse, cartridge type, 1-1/2 in. lg, 13/32 in. diam; black bakelite body; bright alloy pl brass contacts; 2-1/4 in. lg, | Holder for F-1001 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|-------------------|---|---|----------------------|
| XF-1001 (cont) | | 1. 775 in. wd, 1. 2 in. h o/a dimen; 2 solder lug type term, hot tin dipped; two 0. 167 in. mtg holes 1. 312 in. c to c for fastening to panel; one mtg hole 0. 865 in. diam; waterproof; CFA type HPC-DZ; CBTL part/dwg NL-900068-2; same as XF-501 | |
| XF-1002 | | Same as XF-1001 | Holder for F-1002 |
| XI-1001 | N17-L-76763-1597 | LIGHT, INDICATOR: supplied w/lens, 5/8 in. diam, clear, fluted, screw type holder; accommodates neon T3-1/4 NE 51 lamp, single contact miniature bayonet base, 110v; brass shell, black nickel finish, enclosed; 2-5/16 in. lg, 15/16 in. diam o/a dimen, 1 mtg hole required 11/16 in. diam; accommodates up to 1/4 in. max thk panel; horizontally mtd; lamp replaceable from front of panel; 2 solder lug type term, located on socket base, both insulated from shell; incl built in 51, 000 ohm 1/3 w composition resistor; CAYZ type 53408-XP18-997; same as XI-503 | Retainer for I-1001 |
| XR-1116 | N17-L-51710-1675 | LAMPHOLDER: single holder; 2500v breakdown; nickel pl, brass shell, phenolic body, mica filled insulation; 1-7/16 in. lg by 7/8 in. wd by 1-3/8 in. h o/a dimen; 2 tinned solder term; two 0. 152 in. diam mtg holes spaced 1-1/8 in. c to c; L slot for holding bayonet type bulb; CJA part no. 33992 | Socket For R-1116 |
| XV-1001 | N16-S-62603-6700 | SOCKET, ELECTRON TUBE: 7 contacts, beryllium copper, silver pl; miniature; incl metal shield base, 0. 800 in. diam, 0. 611 in. h; incl center shield, 0. 125 in. ID; oval; 1-1/8 in. lg, 0. 800 in. wd, 25/32 in. h o/a dimen excluding term; ceramic insulator; one piece saddle mtg, 5/8 in. diam chassis hole required, 2 mtg holes, 0. 125 in. diam, 0. 875 in. c to c; per spec JAN-S-28A; JAN type TS102C01 | Socket for V-1001 |
| XV-1002 | N16-S-64063-6714 | SOCKET, ELECTRON TUBE: 9 contacts, beryllium copper, silver pl; miniature; incl metal shield base, 0. 940 in. diam, 0. 611 in. h; incl center shield, 0. 125 in. ID; oval; 1-3/8 in. lg, 0. 940 in. wd, 25/32 in. h o/a dimen excluding term; ceramic insulator; one piece saddle mtg, 3/4 in. diam chassis hole required, 2 mtg holes, 0. 125 in. diam, 1. 125 in. diam, 1. 125 in. c to c; per spec JAN-S-28A; JAN type TS103C01 | Socket for V-1002 |
| XV-1003 | | Same as XV-1002 | Socket for V-1003 |
| XV-1004 | | Same as XV-1002 | Socket for V-1004 |
| XV-1005 | | Same as XV-1002 | Socket for V-1005 |
| XV-1006 | N16-S-61719-4639 | SOCKET, ELECTRON TUBE: 5 contacts, phosphor bronze, silver pl; medium; round; 2-5/32 in. lg, 1-3/8 in. wd, 41/64 in. h o/a dimen excluding term; ceramic steatite body; bracket and retainer ring mtg; 1. 172 in. diam chassis hole required, 2 mtg slots 5/32 in. by 5/16 in. spaced 1-49/64 in. c to c; insulating barriers between all contacts; CJA type 33005 | Socket for V-1006 |
| XV-1007 | | Same as XV-1006 | Socket for V-1007 |
| XV-1008 | | Same as XV-1002 | Socket for V-1008 |
| XV-1009 | | Same as XC-1034 | Socket for V-1009 |
| XV-1010 | | Same as XC-1034 | Socket for V-1010 |
| XV-1011 | | Same as XV-1002 | Socket for V-1011 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|-------------------|
| XV-1012 | | Same as XV-1001 | Socket for V-1012 |
| XV-1013 | | Same as XV-1001 | Socket for V-1013 |
| XV-1014 | | Same as XV-1001 | Socket for V-1014 |
| XV-1015 | | Same as XV-1002 | Socket for V-1015 |
| XV-1016 | | Same as XV-1001 | Socket for V-1016 |
| XV-1017 | | Same as XV-1002 | Socket for V-1017 |
| XV-1018 | | Same as XV-1001 | Socket for V-1018 |
| XV-1019 | | Same as XV-1002 | Socket for V-1019 |
| XV-1020 | | Same as XV-1002 | Socket for V-1020 |
| XV-1021 | | Same as XV-1001 | Socket for V-1021 |
| XV-1022 | | Same as XV-1001 | Socket for V-1022 |
| XV-1023 | | Same as XV-1002 | Socket for V-1023 |
| Z-1001 | N16-F-44702-8298 | FILTER, LOW PASS: attenuation at 6000 cps, 35 db minimum and 10,000 cps, 45 db minimum; 10,000 ohms input impedance, 10,000 ohms output impedance, not tapped; 2-9/16 in. lg, 1-9/16 in. wd, 2-1/2 in. h o/a dimen excluding term; hermetically sealed, rectangular metal case; 4 inserts no. 6-32 thd by 1/4 in. d on 2-1/8 in. by 1-1/8 in. mtg/c; 3 solder lug term on insulators 5/16 in. diam by 1/2 in. lg o/a, located on mtg surface, housing and term per spec MIL-T-27; CAVM part/dwg S-1554-1; CBTL part/dwg NL-980974-1 | Plate of V-1004A |
| 1301-1399 | F-16-A-33460-1003 | AMPLIFIER, RADIO FREQUENCY, AM-1008/SRT: frequency range 300 kc to 26 mc; 100 or 500 w power output, 51 ohms output impedance; input data 0.1 w, 2v required for excitation, 91 ohms input impedance; operating requirements 115v AC, 60 cyc, single ph, DC operating requirements 500v, 300v, -24v, -220v, and one of the following depending on mode of operation 1050v, 1300v, 2400v, 3000v; for 100 w operation the screens are supplied w/300v, for 500 w operation the supply is 500v, during CW transmission at 100 w a plate supply of 1300v is available, during 500 w CW operation the plate supply becomes 3000v, during 100 w phone operation a 1050v supply is available at the plates, for 500 w phone operation a 2400v supply is available, 500 w operation is inhibited under certain overload conditions or component failures, control circuit function prevents 500 w operation at frequencies between 300 kc and 2 mc; material of case aluminum; 25-1/4 in. lg, 16 in. wd, 11-11/64 in. h o/a; drawer mtd; p/o AN/SRT-14, 15, 16; CBTL part/dwg NL-900560-26 | |
| A-1301 | N17-R-99999-0855 | VENTILATOR: duct u/w blower to cool PA tube; synthetic rubber, solid, 40 ±5 shore hardness; irregular shape; 3-5/8 in. lg, 2-21/32 in. wd, 3-7/32 in. h o/a; 1500 per sq in. tensile strength; oil resistant; press fit mtd; CCCW type; CBTL part/dwg NL-900533-12 | u/w Blower B-1306 |
| B-1301 thru B-1305 | | Not Used | |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|----------------------------|
| B-1306 | Low Failure Item | BLOWER: inverted type, centrifugal vane; electric motor operated; non-portable; guarded; motor 0.02 hp, 3200 rpm, single ph, 60 cyc, 115v AC; 6-13/32 in. lg, 4-7/16 in. wd, 6-3/32 in. h; 50 cfm at 3200 rpm; single speed; direct drive; CCW; reversible; steel, painted black; wheel is dynamically balanced; four no. 8-32 thd mtg holes 2 on each flat of motor spaced 0.750 in. apart; 1-3/32 in. h, 2-13/32 in. outlet at bottom; CCBN model DRPPI type KS-409, part no. AO-1903; CBTL part/dwg NL-900532-12; c/o B-1306A, O-1304 and impeller housing | Ventilation V-1304 |
| B-1306A | N17-M-57683-1432 | MOTOR, ALTERNATING CURRENT: capacitor start and run induction motor; 115v, 0.37 amp, 60 cyc, single ph, 37 w at full load; 0.02 hp, 3200 rpm, reversible in rotation; closed frame; ambient temp 80° C, 25° C temp rise for continuous duty; flatted stainless steel shaft, 1-3/8 in. lg from motor enclosure; 3-7/16 in. lg from blower housing wall excluding shaft, 2-1/2 in. h, 2-3/4 in. wd; four flexible wire lead term; mtd by two brackets, 8 mtg holes on motor, no. 8-32 NC-2B thd 1/4 in. d, 4 each on top flat and 4 on bottom flat w/1 in. by 0.750 in. mtg/c; CCBN part no. AO-1903-01; CBTL part/dwg NL-900532-12 item 1; p/o B-1306 | Drive for B-1306 |
| C-1301 | N16-C-30119-7167 | CAPACITOR, FIXED, MICA DIELECTRIC: 470 mmf ±20%; 500v DCW; per spec JAN-C-5; JAN type CM25E471M | Grid Coupling V-1301 |
| C-1302 | N16-C-33627-7716 | CAPACITOR, FIXED, MICA DIELECTRIC: 10,000 mmf ±20%; 300v DCW; per spec JAN-C-5; JAN type CM35E103M | Cathode By-Pass V-1301 |
| C-1303 | N16-C-18885-2501 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500v DC working voltage; 2200 mmf, ±20%; 22 mmf/mf/°C neg temp coef, ±30 mmf/mf/°C tolerance; style no. 20K Ref Dwg Group 1; un-insulated body, 0.230 in. diam, 0.860 in. lg o/a dimen; schematic diagram no. 1-R Ref Dwg Group 1; mtg facilities not incl; CER Style "S" | Screen Filter V-1301 |
| C-1304 | N16-C-64062-7023 | CAPACITOR, VARIABLE, CERAMIC DIELECTRIC: compression type; single section; 4-30 mmf; 500v DCW; per spec JAN-C-81; JAN type CV14C300 | Padding Capacitor |
| C-1305 | N16-C-61846-1421 | CAPACITOR, VARIABLE, AIR DIELECTRIC: plate meshing type; single section; 18-400 mmf; midline frequency tuning characteristic; 1000v AC peak voltage; 3-11/32 in. lg, 2-1/16 in. wd, 1-15/16 in. h dimen excluding shaft and bushing, shaft extends 3/8 in. beyond bushing each end; extension shaft adjustment, 180° CW rotation; base not insulated, rigid aluminum frame; 3 solder lug type term; two no. 6-32 thd tap mtg holes on 2-19/32 in. centers; rotor rotation not limited by pin stops, ball bearing front & rear; 27 rotor 26 stator plates; 0.025 nominal air gap; CHC part no. RMC style modified; CBTL part/dwg NL-981798-2 | Buffer Tuning |
| C-1306 | | Same as C-1303 | By-Pass Plate V-1301 |
| C-1307 | | Same as C-1303 | Grid Coupling V-1302 |
| C-1308 | | Same as C-1303 | By-Pass Grid Return V-1302 |
| C-1309 | N16-C-31095-6967 | CAPACITOR, FIXED, MICA DIELECTRIC: 1000 mmf ±20%; 500v DCW; per spec JAN-C-5; JAN type CM25E102M | RF By-Pass CR-1301 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|---|
| C-1310 | N16-C-48817-1103 | CAPACITOR, FIXED, PAPER DIELECTRIC: 1 mf $\pm 10\%$; 600v DCW; per spec JAN-C-25; JAN type CP63B1EF105K | Motor Capacitor B-1306 |
| C-1311 | | Same as C-1303 | Screen By-Pass V-1302 |
| C-1312 | | Same as C-1305 | IPA Tuning |
| C-1313 | | Same as C-1303 | By-Pass Plate Return V-1302 |
| C-1314 | | Not Used | |
| C-1315 | N16-C-34788-7453 | CAPACITOR, FIXED, MICA DIELECTRIC: 33,000 mmf $\pm 20\%$; 600v DCW; per spec JAN-C-5; JAN type CM55E333M | Grid Return By-Pass V-1304 |
| C-1316 | N16-C-31913-9488 | CAPACITOR, FIXED, MICA DIELECTRIC: 2200 mmf $\pm 20\%$; 1200v DCW; per spec JAN-C-5; JAN type CM45A222M | Grid Coupling V-1304 |
| C-1317 | N16-C-46371-9849 | CAPACITOR, FIXED, PAPER DIELECTRIC: 600v DC working voltage, 20 amps rated current, 250,000 mmf, $+20\%$ - 10% tolerance, capacity range 225,000 mmf to 300,000 mmf; metal case, uninsulated, hermetically sealed, o/a dimen 2-1/4 in. lg by 1 in diam excluding mtg bracket; 2 term, 3/8 in. diam bushing w/no. 10-32 thd hole 1/4 in. d at each end; bracket type mtg, non-removable, one 0.250 diam mtg hole in bracket located 7/8 in. from central axis; feedthru type w/case grounded; CSF Hypass part no. 48P12 | Filament By-Pass V-1304 |
| C-1318 | N16-C-99999-1173 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 5000v DC working voltage; 1000 mmf, $\pm 10\%$; style no. 30P Ref Dwg Group 1; insulated body, 13/16 in. diam, 5/8 in. lg o/a dimen; schematic diagram no. 1-R Ref Dwg Group 1; mtg facilities incl, removable, two no. 6-32 NC-2 tap, 0.187 in. d located at both ends; CBN part no. DA858S-1000 | Plate Blocking V-1304 |
| C-1319 | N16-C-65863-2275 | CAPACITOR, VARIABLE, VACUUM DIELECTRIC: 1 section; 10-300 mmf, straight line capacity tuning characteristic from 20-290 mmf; 10000v AC max RF peak voltage, 42 amp max RMS; special extension drive shaft adjustment, CCW rotation from min to max capacity, 0.768 in. motion changes capacitance from 10 mmf to 285 mmf; o/a dimen 6-9/16 in. lg, 3 in. diam excluding tubulation projection; glass and copper enclosed, flange & anode silver pl; 2 term, 1 ferrule type and 1 formed by mtg flange, located 1 at each end; four 0.196 in. diam holes spaced irregularly on 2.625 in. diam circle located on flange mtg, CAZG type UCS 10-300 mmf, 10KV peak volts w/flange mtg attached, dwg no. 259 modified; CBTL part/dwg NL-980954-2 | Power Amplifier Plate Tuning |
| C-1320 | | Same as C-1319 | Power Amplifier Plate Tuning V-1304 |
| C-1321 | | Same as C-1319 | Power Amplifier Antenna Matching Tuning |
| C-1322 | N16-C-31798-8002 | CAPACITOR, FIXED, MICA DIELECTRIC: 2000 mmf $\pm 5\%$; 2500v DCW; per spec JAN-C-5; JAN type CM55E202J | Screen By-Pass V-1304 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|---|
| C-1323 | N16-C-61118-7166 | CAPACITOR, VARIABLE, AIR DIELECTRIC: plate meshing type; single section; 11-140 mmf; straight line capacity; 1000v AC peak voltage; 2-1/4 in. lg, 1-13/16 in. wd, 1-11/16 in. h o/a dimen excluding shaft, 1-3/8 in. shaft extension; screw-driver 360° CW rotation; base not insulated, rigid aluminum frame, iridite finish; 3 solder lug type term; two no. 6-32 thd tap mtg holes spaced 1-19/32 in. c to c; 10 rotor & 9 stator plates, nickel pl; silver pl rotor contact; ceramic insulator; ball bearings front and rear; 0.245 in. air gap; CHC type RMC-140-S modified; CBTL part/dwg NL-981337-2 | Harmonic Trap Tuning |
| C-1324 | | Not Used | |
| C-1325 | N16-C-29266-6432 | CAPACITOR, FIXED, MICA DIELECTRIC: 200 mmf ±5%; 3000v DCW; per spec JAN-C-5; JAN type CM65B201J | Power Amplifier Band 1 Fixed Padder |
| C-1326 | | Not Used | |
| C-1327 | N16-C-28554-4632 | CAPACITOR, FIXED, MICA DIELECTRIC: 100 mmf ±5%; 3000v DCW; per spec JAN-C-5; JAN type CM65B101J | Power Amplifier Band 1 Fixed Padder |
| C-1328 | | Same as C-1309 | DC Blocking CR-1301 |
| C-1329 | | Same as C-1317 | Filament By-Pass V-1304 |
| C-1330 | For Replacement Use N16-C-27842-2836 | CAPACITOR, FIXED, MICA DIELECTRIC: 62 mmf ±5%; 3000v DCW; per spec JAN-C-5; JAN type CM65B620J | Fixed Padder Band 2 V-1304 |
| C-1331 | For Replacement Use N16-C-28818-2636 | CAPACITOR, FIXED, MICA DIELECTRIC: 130 mmf ±5%; 3000v DCW; per spec JAN-C-5; JAN type CM65B131J | Fixed Padder Band 2 V-1304 |
| C-1332 | | Same as C-1302 | Meter By-Pass M-1304 |
| C-1333 | | Same as C-1302 | Meter By-Pass M-1303 |
| C-1334 | | Same as C-1302 | Meter By-Pass M-1301 |
| C-1335 | | Same as C-1318 | By-Pass Plate Return V-1304 |
| C-1336 thru C-1366 | | Not Used | |
| C-1367 | N16-C-27578-3437 | CAPACITOR, FIXED, MICA DIELECTRIC: 47 mmf ±10%; 2500v DCW; per spec JAN-C-5; JAN type CM45B470K | Screen By-Pass V-1304 |
| C-1368 | | Same as C-1367 | Screen By-Pass V-1304 |
| C-1369 | N16-C-29655-7922 | CAPACITOR, FIXED, MICA DIELECTRIC: 300 mmf ±2%; 500v DCW; per spec JAN-C-5; JAN type CM25D301G | V-1301 Band 5 Band Spread Capacitor |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--|
| C-1370 | N16-C-28547-9122 | CAPACITOR, FIXED, MICA DIELECTRIC: 100 mmf $\pm 2\%$; 500v DCW; per spec JAN-C-5; JAN type CM25D101G | V-1301 Band 6 Band Spread Capacitor |
| C-1371 | | Same as C-1369 | V-1302 Band 5 Band Spread Capacitor |
| C-1372 | | Same as C-1370 | V-1302 Band 6 Band Spread Capacitor |
| C-1373 | For Reference Only | CAPACITOR, FIXED, AIR DIELECTRIC: 1 section; 20 mmf, $\pm 20\%$; 1 plate, brass, silver pl; not in Ref Dwg Group 1, c/o 1 rectangular plate and one 3/8 in. sq by 1-23/32 in. capacitor mt, chassis forms one electrode; 1-23/32 in. d, 3 in. h, 2-7/8 in. wd o/a dimen; mtg facilities incl, non-removable, two 0.193 in. diam mtg holes spaced 3/8 in. c to c located at end of capacitor mt; 1 mtg screw to be used as term; 0.250 in. nominal air gap; CBTL part/dwg NL-981886-1 | V-1304 Fixed Padding |
| C-1374 | | Not Used | |
| C-1375 | | Same as C-1302 | Cathode By-Pass V-1302 |
| C-1376 | | Not Used | |
| C-1377 | | Same as C-1301 | By-Pass Grid Return V-1301 |
| C-1378 | | Same as C-1302 | Cathode By-Pass |
| C-1379 | | Same as C-1318 | By-Pass H. V. Supply Lead |
| C-1380 | N16-C-15929-9002 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 5000v DC working voltage; 10 mmf, $\pm 10\%$; style not incl in Ref Dwg Group 1; insulated body, 3/8 in. diam by 3/8 in. lg less axial lead term; CBN part no. 854-10Z | L-1313 Fixed Padding |
| C-1381 | | Same as C-1380 | L-1314 Fixed Padding |
| CR-1301 | N16-T-51734-10 | CRYSTAL UNIT, RECTIFYING: germanium diode; per spec JAN-1-A; JAN type 1N34A; same as CR-1002 | RF Rectifier |
| E-1301 | | Not Used | |
| E-1302 | N16-C-289001-102 | CHIMNEY: c/o air flow chimney w/chimney base and 3 captive screws; pyrex glass and aluminum, ball shape; 6 in. h, 4-3/16 in. diam excluding mtg wings, 1/8 in. wall thk, 2-1/8 in. diam opening on top with one 1/8 in. wd slot; chimney secured to chimney base w/tube basing cement; mtd by 3 captive screws no. 8-32 thd irregularly spaced on 4-5/8 in. B. C.; CBTL part/dwg NL-982370-2; u/w XV-1304, V-1304 | Used to Cool Power Amplifier Tube 4-400A |
| E-1303 | Low Failure Item | TERMINAL BOARD: general purpose; 4 brass, silver pl solder lug term; 1/8 in. thk melamine glass board; 1-7/8 in. lg by 7/8 in. wd by 3/4 in. h o/a; two 0.191 in. diam mtg holes 1-3/8 in. c to c; incl two 1/4 in. diam 0.421 in. lg shoulder spacers each w/ no. 6-32 tap hole through center; CBTL part/dwg NL-900554-1 | Connection Point |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------------------|---|---|----------------------|
| E-1304 | N17-I-70531-3001 | INSULATOR, STANDOFF: white ceramic; glazed finish; rectangular pillar standoff, code no. 46 Ref Dwg Group 9; 1-1/2 in. lg by 3/4 in. wd by 1/2 in. h o/a dimen; two no. 8-32 tapped mtg holes on each end w/0.375 in. mtg/c; CDP part 1123-01 | Mounts C-1373 |
| E-1305 | | Not Used | |
| E-1306 | N16-K-702781-122 | KNOB: pointer type, center portion of knob dome shape; aluminum, black enamel finish; for 1/4 in. diam shaft; slotted to mate with locating pin on switch shaft, 5/8 in. lg by 0.100 in. wd by 3/32 in. d; marked "PUSH" standard gothic characters, white filled; 2-3/8 in. lg by 1-1/8 in. h by 1-1/32 in. wd o/a; CBTL part/dwg NL-983341-2 | u/w Band Switch |
| E-1307 | N16-K-702781-121 | KNOB: set screw type; positive gripping surface; phenolic body; o/a dimen 1-1/2 in. OD by 15/16 in. thk; w/mechanically attached skirt; straight shank; designed to accommodate round unthreaded shaft 1/4 in. diam, 9/16 in. d hole, w/2 set screws, socket type drive, no. 8-32 thd; phenolic finish, dull matt; black; w/insert, brass, not removable; without markings; without pointers; CBTL part/dwg NL-901373-2 | u/w "Tune PA" |
| E-1307.1 | | Same as E-1307 | u/w "Tune IPA" |
| E-1308 | N16-K-702781-120 | KNOB: round; black thermosetting phenolic, dull finish; for 1/4 in. diam shaft; two no. 8-32 by 3/16 in. lg set screws; w/pointer; 1-1/16 in. diam, 5/8 in. thk, 1-5/32 in. lg; brass, nickel pl insert; 15/32 in. depth of shaft hole; fluted; CMI part no RE10F479C type A; CBTL part/dwg NCP-20-1-11-2; same as E-1015 | u/w PA Switch |
| E-1308.1 | | Same as E-1308 | u/w IPA Switch |
| E-1308.2 | | Same as E-1308 | u/w Voltmeter Switch |
| E-1309 | Assemble from component parts | SUPPRESSOR, PARASITIC: resistor and coil type; 7/8 in. lg, 3/8 in. diam o/a; c/o 7 turns no. 18 AWG bare tinned copper wire spaced 1/16 in. apart around a 330 ohm, 1 w resistor type RC30BF331J; uncased; term mtg; 1 wire lead each end; CBTL part/dwg NL-980955-1 | B+ Feed for V-1302 |
| E-1310 | N17-S-91941-1102 | SWITCH WAFER, rotary: ceramic, Alsimag no. 196 L4, impregnated w/Dow Corning no. 200; 3.830 in. OD by 3.030 in. ID by 0.312 in. thk, three 0.180 in. diam holes spaced 120° apart on 3.430 in. diam B. C. and twelve 0.120 in. diam holes spaced 30° apart on 3.430 in. diam B. C.; no contacts; CPD part M-13714 | p/o S-1302 |
| E-1310.1 thru E-1310.6 | | Same as E-1310 | p/o S-1302 |
| E-1311 | N17-C-81987-7871 | CONTACT, ELECTRICAL: spring leaf type; phosphor bronze, silver pl; "U" shaped, 1-13/32 in. lg by 5/16 in. wd by 0.0159 in. thk o/a; 1 solder lug term; rated at 500v DC, 1.0 amp; oval mtg hole, 0.202 in. by 0.140 in.; CPD part S-13720-102 | p/o S-1302 |
| E-1311.1 thru E-1311.4 | | Same as E-1311 | p/o S-1302 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|-------------------------------|---|---|-------------------|
| E-1312 | N17-C-82121-2135 | CONTACT, ELECTRICAL: spring leaf type; phosphor bronze, silver pl; "Z" shaped, 1-13/32 in. lg by 5/16 in. wd by 0.0159 in thk o/a; 1 solder lug terminal; rated at 500v DC, 1.0 amp; oval mtg hole, 0.202 in. by 0.140 in.; CPD part S-13720-103 | p/o S-1302 |
| E-1312.1 thru E-1312.5 | | Same as E-1312 | p/o S-1302 |
| E-1313 | N17-C-81971-2435 | CONTACT, ELECTRICAL: spring leaf type; silver pl brass; "T" shaped, 25/32 in. lg by 11/16 in. wd by 3/8 in. h by 0.020 in. thk o/a; 1 solder lug term at mtg end; contact 1/2 in. from 0.144 in. diam mtg hole; CPD part S-14418 | p/o S-1302 |
| E-1313.1 thru E-1313.35 | | Same as E-1313 | p/o S-1302 |
| E-1314 | N17-C-81991-9487 | CONTACT, ELECTRICAL: dual spring leaf type; nickel silver contact, body beryllium copper, silver pl; irregular shape, 1-5/8 in. lg by 5/16 in. wd by 1/2 in. h by 0.015 in. thk o/a; 1 solder lug term at mtg end; contact approx 1-1/8 in. from mtg hole; oval mtg hole 0.202 in. by 0.140 in.; CPD part M-14513 | p/o S-1302 |
| E-1314.1 thru E-1314.5 | | Same as E-1314 | p/o S-1302 |
| E-1315 | N17-C-81964-9404 | CONTACT, ELECTRICAL: spring leaf type; silver pl beryllium copper; "Z" shaped, 13/32 in. h by 5/8 in. lg by 0.218 in. wd by 0.010 in. thk; 1 solder lug term; oval mtg hole 0.124 in. by 0.046 in.; CPD part S-14413 | p/o S-1301 |
| E-1315.1 thru E-1315.13 | | Same as E-1315 | p/o S-1301 |
| E-1316 | N17-C-81961-3552 | CONTACT, ELECTRICAL: spring leaf type; silver pl brass; "T" shaped, 0.551 in. lg by 0.468 in. wd by 0.250 in. h by 0.020 in. thk o/a, 1 solder lug term at mtg end; contact 0.351 in. from mtg hole; mtg hole 0.093 in. diam; CPD part S-14412 | p/o S-1301 |
| E-1316.1 thru E-1316.23 | | Same as E-1316 | p/o S-1301 |
| E-1317 | N17-C-81978-2876 | CONTACT, ELECTRICAL: spring leaf type; coin silver contact shoe, 0.130 in. lg by 0.036 in. wd by 0.050 in. h o/a; irregularly shaped beryllium copper contact, silver pl, heat treated, 31/32 in. lg by 7/32 in. wd by 0.010 in. thk o/a; 1 solder lug term at mtg end; rated at 500v DC; contact 1/2 in. from mtg hole; oval mtg hole 0.100 in. by 0.150 in.; with 0.130 in. lg, 0.036 in. wd hole for insertion of contact shoe; CPD part S-13435 | p/o S-1301 |
| E-1317.1 thru E-1317.3 | | Same as E-1317 | p/o S-1301 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|---------------------------|
| E-1318 | N16-K-702781-115 | KNOB: round; black thermosetting phenolic; dull finish; for 1/4 in. diam shaft; two no. 6-32 by 1/8 in. lg set screws; w/ pointer; 13/16 in. diam, 9/16 in. thk, 7/8 in. lg o/a; brass, nickel pl insert; 7/16 in. depth of shaft hole; fluted; CMI part no. RE10F479F type G; CBTL part/dwg NCP-20-1-18-2; same as E-1017 | u/w Excitation Control |
| E-1319 | N16-A-20661-1011 | ADAPTER, cable: left hand mtg strap type; for use w/RG-55/U, RG-58/U cable; o/a lg 1/2 in. ; mtd by means of hole in strap 3/8 in. from c to c of cable; type coax cable term, CARO no. 6325 | Coax Cable Adapter |
| E-1320 | N16-A-20661-1005 | ADAPTER, cable: single hole mounting type; for use with RG-55/U, RG-58/U cable; o/a lg 13/16 in. ; one hole mtg 5/16 in. diam; type coax cable termination; CARO part 1025 | Coax Cable Adapter |
| E-1321 | | Same as E-1320 | Coax Cable Adapter |
| E-1322 | | Same as E-1320 | Coax Cable Adapter |
| E-1323 | | Same as E-1320 | Coax Cable Adapter |
| E-1324 | N16-A-20661-1002 | ADAPTER, cable: right hand mtg strap type; for use with RG-55/U, RG-58/U cable; o/a lg 1/2 in. ; mtd by means of hole in strap 3/8 in. from c to c of cable; type coax cable termination; CARO no. 3975 | Coax Cable Adapter |
| E-1325 | | Same as E-1319 | Coax Cable Adapter |
| E-1326 | | Same as E-1319 | Coax Cable Adapter |
| E-1327 thru E-1394 | | Not Used | |
| E-1395 | Shop Manufacture | TERMINAL BOARD: ceramic or melamine type GMG; eight solder lug type term, one common term; o/a dimen 1-1/2 in. lg, 1-5/32 in. wd, 9/16 in. h; two no. 3-48 tapped mtg spacers 29/64 in. mtg/c; CBY part 13025; CBTL part/dwg NL-960103-1-3; same as E-1013 | Component Mounting |
| E-1396 | | Same as E-1395 | Component Mounting |
| E-1397 | Low Failure Item | TERMINAL BOARD: general purpose; 15 brass, silver pl solder lug term; 1/2 in. between centers; 1/8 in. thk melamine glass board; 4-7/8 in. lg, 1 in. wd, 11/32 in. h o/a; four 0.180 in. diam mtg holes, one on each corner 1/2 in. c to c w/4-1/4 in. mtg/c; CBTL part/dwg NL-980907-1 | IPA Connection Point |
| E-1398 | Low Failure Item | TERMINAL BOARD: general purpose; 12 brass, silver pl solder lug term; 1/8 in. thk melamine glass board; 4-9/16 in. lg by 1-1/4 in. wd by 9/16 in. h o/a; two 0.169 in. diam mtg holes 4-1/16 in. c to c; CBTL part/dwg NL-900581-1 | Component Mounting |
| E-1399 | Low Failure Item | TERMINAL BOARD: general purpose; 33 brass, silver pl solder lug term; 1/8 in. thk melamine glass board; 7-11/16 in. lg, 2-5/8 in. wd, 1/2 in. h o/a; five 0.169 in. diam mtg holes on irregular centers; CBTL part/dwg NL-900376-2 | Component Mounting |
| F-1301 | N17-F-14690-5825 | FUSE, CARTRIDGE: 3 amp, 250v; time delay, 150% for 0-1 minute, 300% for 6 seconds minimum; 1-1/2 in. lg, 0.406 in. diam; per spec MIL-F-15160A; MIL type FO9G3R00B; same as F-1001 | B-1306, T-1302 Protection |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|-----------------------|
| H-1301 | Low Failure Item | CHAIN ASSEMBLY: miniature sprocket type, 0.147 in. pitch lg of link by 0.139 in. wd; stainless steel; 56 pitch lg o/a; rivet type links w/disconnecting pin, keeper and tubular pin; 100 lbs yield strength; CBKH 75-SS series; CBTL part/dwg NL-900261-2-1 | p/o PA Dial Drive |
| H-1302 | Low Failure Item | CHAIN ASSEMBLY: miniature sprocket type, 0.147 in. pitch lg of link by 0.139 in. wd; stainless steel; 96 pitch lg o/a; rivet type links w/disconnecting pin, keeper, and tubular pin; 100 lbs yield strength; CBKH 75-SS series; CBTL part/dwg NL-900261-2-3 | Drive for S-1301 |
| H-1303 | Low Failure Item | CHAIN ASSEMBLY: miniature sprocket type, 0.147 in. pitch lg of link by 0.139 in. wd; stainless steel; 88 pitch lg o/a; rivet type links w/disconnecting pin, keeper, and tubular pin; 100 lbs yield strength; CBKH 75-SS series; CBTL part/dwg NL-900261-2-5 | IPA Tuning Drive |
| H-1304 | Low Failure Item | CHAIN ASSEMBLY: miniature sprocket type, 0.147 in. pitch lg of link by 0.139 in. wd; stainless steel; 48 pitch lg o/a; rivet type links w/disconnecting pin, keeper, and tubular pin; 100 lbs yield strength; CBKH 75-SS series; CBTL part/dwg NL-900261-2-2 | p/o IPA Dial Drive |
| H-1305 | Low Failure Item | CHAIN ASSEMBLY: miniature sprocket type, 0.147 in. pitch lg of link by 0.139 in. wd; stainless steel; 86 pitch lg o/a; rivet type links w/disconnecting pin, keeper, and tubular pin; 100 lbs yield strength; CBKH 75-SS series; CBTL part/dwg NL-900261-2-13 | p/o Right Angle Drive |
| H-1306 | Low Failure Item | CLAMP, tube: stainless steel wire type 302, 0.093 in. diam; bent to 2-5/8 in. ID; terminated in hooked ends 0.145 in. ID, bent 90° outward, spaced 5/16 in. apart; incl feet, stainless steel 3/32 in. thk silver soldered to ring, spaced 180° apart; CBTL part/dwg NL-982591-1 | Clamp for V-1304 |
| H-1307 | N17-C-99999-489 | CLAMP, tube: stainless steel; c/o strap w/clip and bracket; one hole in bracket for no. 10 machine screw for mtg; 1.625 in. diam by 7/8 in. h o/a; CAIS type 926H-5; same as H-1001 | Clamp for V-1302 |
| H-1308 | G42-P-14141-152 | PIN, taper: steel, Groov-Pin full length taper, 3/32 in. diam by 3/4 in. lg o/a; CCCU type 1 | Locking Pin |
| H-1308.1 | | Same as H-1308 | Locking Pin |
| H-1308.2 | | Same as H-1308 | Locking Pin |
| H-1309 | G42-P-14141-136 | PIN, taper: steel, Groov-Pin full length taper, 3/32 in. diam by 1/2 in. lg o/a; CCCU type 1 | Locking Pin |
| H-1309.1 | | Same as H-1309 | Locking Pin |
| H-1310 | G42-P-14141-216 | PIN, taper: steel, Groov-Pin full length taper, 7/64 in. diam by 1/2 in. lg o/a; CCCU type 1 | Locking Pin |
| H-1310.1 | | Same as H-1310 | Locking Pin |
| H-1310.2 | | Same as H-1310 | Locking Pin |
| H-1311 | G42-P-14141-140 | PIN, taper: steel, Groov-Pin full length taper, 3/32 in. diam by 9/16 in. lg o/a; CCCU type 1 | Locking Pin |

TABLE 8-3: TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|---|
| H-1312 | G42-P-14142 | PIN, taper: steel, Groov-Pin full length taper; 7/64 in. diam by 3/4 in. lg o/a; CCCU type 1 | Locking Pin |
| H-1312.1 | | Same as H-1312 | Locking Pin |
| H-1312.2 | | Same as H-1312 | Locking Pin |
| H-1313 | G42-P-14141 | PIN, taper: steel, Groov-Pin full length taper; 1/16 in. diam, 3/8 in. lg o/a; CCCU type 1 | Locking Pin |
| H-1314 | Low Failure Item | SLIDE, chassis: right hand; c/o inner and outer slide, front latch, ball spacer w/stainless steel balls, and pin stop; corrosion resisting steel, electropolish finish; 23-1/8 in. lg closed, 1-5/8 in. h, 9/16 in. wd o/a; nine 0.169 in. diam mtg holes, countersunk, spaced 2-1/2 in. c to c; two 1/4 in. -28 NF-2 thd mtg holes 1 in. c to c located on back end; CBTL part/dwg NL-900037-12-1; same as H-502 | For RFA Chassis |
| H-1315 | Low Failure Item | SLIDE, chassis: left hand, c/o inner and outer slide, front latch, ball spacer w/stainless steel balls, and pin stop; corrosion resisting steel, electropolish finish; 23-1/8 in. lg closed, 1-5/8 in. h, 9/16 in. wd o/a; nine 0.169 in. diam mtg holes, countersunk, spaced 2-1/2 in. c to c, two 1/4 in. -28 NF-2 thd mtg holes spaced 1 in. c to c located on back end; CBTL part/dwg NL-900037-12-2; same as H-501 | For RFA Chassis |
| H-1316 | Low Failure Item | CHAIN ASSEMBLY: miniature sprocket type, 0.147 in. pitch lg of link by 0.139 in. wd; stainless steel; 92 pitch lg o/a; rivet type links w/disconnecting pin, keeper and tubular pin; 100 lbs yield strength; CBKH 75-SS series; CBTL part/dwg NL-900261-2-14 | PA Tuning Drive |
| I-1301 | N17-L-6491-50 | LAMP, INCANDESCENT: 28v, 0.035 amp; MBCA Ref Dwg Group 7, special 952 base w/5/16 in. -32 NEF-2 thread and knurled sleeve; T-1-3/4 clear, amber color plastic cap, 1 tungsten, C-21; 3/4 in. max o/a h; over 25 hrs rated life; any burning position; CAYZ dwg no. 165-22-327E, type 320A | Power Amplifier Screen Overload Indicator |
| I-1302 | | Same as I-1301 | Power Amplifier Plate Overload Indicator |
| I-1303 | | Same as I-1301 | Antenna Tuning Unit Overload Indicator |
| I-1304 | | Same as I-1301 | Spare |
| I-1305 | | Same as I-1301 | 500 w Operation Indicator |
| I-1306 | | Same as I-1301 | 100 w Operation Indicator |
| I-1307 | | Same as I-1301 | 100 w Carrier "ON" Indicator |
| I-1308 | | Same as I-1301 | 500 w Carrier "ON" Indicator |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|---|
| J-1301 | N17-C-99999-2015 | CONNECTOR, RECEPTACLE, ELECTRICAL: consists of double row of 8 sliding contacts per row, male, flat; 2-7/16 in. lg, 7/8 in. wd, 9/16 in. h excluding contacts and term; w/ partially enclosed plastic shell; polarized; non-locking; 5 amp, 600v DC; mtd by two 0.125 in. diam holes in diagonal corners, spaced 2.024 in. c to c in lg and 0.460 in. c to c in wd; CPH type 26-159-16; same as P-401 | Inter-Unit Wiring |
| J-1302 | | Same as J-1301 | Inter-Unit Wiring |
| J-1303 | N17-C-73108-1262 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female, round; 1-1/32 in. lg, 3/4 in. wd across mtg plate; 500v peak; RF connector, 52 ohms nominal impedance; cylindrical shape; polystyrene insert; four no. 3-56 tapped mtg holes in corners of mtg flange, 0.50 in. mtg/c; JAN type UG-291/U | RF Input from RFO |
| J-1304 | N17-C-73114-7071 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female, round, straight type; 1-27/32 in. lg, 1 in. wd across mtg plate; RF connector, 52 ohms nominal impedance; cylindrical shape; four 1/8 in. diam mtg hole in corner of mtg flange, 23/32 in. mtg/c; CARO type 36000 | Inter-Unit Wiring to Antenna Tuning |
| J-1305 | | Same as J-1303 | Inter-Unit Wiring Receiver Input |
| J-1306 | N17-C-99999-2001 | INSULATOR, FEEDTHRU: bushing and bowl w/tapped cap and thd stud; steatite, brass, silver pl; 2-5/8 in. lg, 1-1/8 in. diam o/a; 45 amp; 12000v; CCCV type 1125-A modified; CBTL part/dwg NL-900571-1 | Chassis Connector Plate Voltage to V-1304 |
| J-1307 | | Same as J-1303 | External Oscillator Jack On Front Panel |
| J-1308 | N17-C-72811-2237 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female, round; angle type; 90° angle; 1 in. lg, 5/8 in. d; RF connector, 52 ohms nominal impedance; angle shape, brass, silver pl; four mtg holes in corners of mtg flange 0.50 in. mtg/c; JAN type UG-535/U | RF Input Jack to V-1301 |
| J-1309 | N17-C-99999-1196 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female; straight type; phone type connector; dielectric red nylon; 29/32 in. lg, 5/16 in. wd incl hex coupling nut o/a dimen; 1000v peak; w/inclosing shell, cylindrical shape, brass, nickel pl; not polarized, 1 hole, 1/4 in. diam; 1/4 in. -32 thd on receptacle for mating w/coupling nut; CARO part 225A; same as J-504 | Modulation Test Jack |
| K-1301 | | Not Used | |
| K-1302 | N17-R-65150-7805 | RELAY, ARMATURE: contact arrangement 1B, MBCA Ref Dwg Group 4, single throw, normally closed, single break, 500v peak AC, 4 amp, 150 w, non-indicative; one inductive winding, 300 ohms, 24v DC, 80 ma; one term per contact, two term on coil, one side of coil grounded; continuous duty; o/a dimen 2-1/4 in. lg by 1-1/16 in. wd by 1-17/32 in. h; two no. 6-32 tapped holes on 0.750 in. mtg/c; contacts will not open or close under load, 1000v peak AC operating voltage between contacts and frame; CBTL part/dwg NL-925441-1 | Screen Modulation Choke Unshorting Relay |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--------------------------------------|
| K-1303 | N17-R-65155-6191 | RELAY, ARMATURE: contact arrangement, 2 form C, MBCA Ref Dwg Group 4, single break, DC, 24v, 4 amp; 2 inductive windings, DC, SU coil 115 ohms, MR coil 360 ohms, 24v operating voltage, 0.070 amp; 6 term on contact, 2 term on each coil; continuous duty; 4-9/16 in. lg by 1-3/4 in. wd by 2-5/16 in. d o/a dimen; mtd with bracket w/2 holes 5/32 in. diam, spaced 1-3/8 in. c to c; corrosion resistant metal parts designed to operate at sea level; CARE type no. EL-1067-4, dwg 115054; CBTL part/dwg NL-982329-1 | Power Amplifier Overload V-1304 |
| K-1304 | N17-R-65145-7979 | RELAY, ARMATURE: contact arrangement form 2AX2A4B1C, MBCA Ref Dwg Group 4, single break, AC-DC, 4 amp; 1 inductive winding, 300 ohms DC; 24v DC operating voltage; 19 term on contact, 2 term on coil; continuous duty; 2-1/4 in. lg by 1-1/8 in. wd by 1-13/16 in. h o/a dimen; 2 no. 6-32 tapped holes, 3/4 in. c to c; open frame, impregnated coil, contacts rated at 150 w with above current; CRY type J, part no. N-49556; per BuShips spec no. 40T9; CBTL part/dwg NL-981101-1; same as K-1104 | 500 w Latching Relay |
| K-1305 | | Not Used | |
| K-1306 | N17-R-99999-0849 | RELAY, ARMATURE: three sets of form "C" contacts; 3PST; transfer function; 150v peak, 5 amp make, 3 amp break; one winding, 24v DC; one term per contact, two term on coil, one side of coil grounded; continuous duty; capable of 0-20 cps without chatter; 1-7/16 in. lg by 1-3/4 in. h by 1-1/8 in. wd o/a dimen; two no. 4-40 tapped holes on 0.656 in. by 0.375 in. mtg/c; CBTL part/dwg NL-900098-1; same as K-1101 | Keying Relay |
| L-1301 | N16-C-74225-1134 | COIL, RADIO FREQUENCY: 700 uh; 290 turns, no. 10/41 Litz, single enamel, single silk covered copper conductor; single winding, 3 pie universal winding, untapped, unshielded; steatite coil form; two pies each 100 turns, 47/64 in. diam by 5/32 in. wd; one pie 90 turns, 11/16 in. diam by 5/32 in. wd; o/a coil dimen 1-1/8 in. lg, 47/64 in. diam; coil form dimen 1 in. lg by 1/2 in. diam; one solder lug term at top of coil form, one wire pigtail terminal at bottom of coil form; mtd by single no. 8-32 thd mtg hole, 3/8 in. d at bottom of coil form; CBTL part/dwg NL-981864-1 | Buffer Band 1 Tank (0.3 to 0.8 mc) |
| L-1302 | N16-C-76520-7157 | COIL, RADIO FREQUENCY: 0.38 uh at 25 mc with slug withdrawn; six turns, double spaced, no. 14 AWG copper conductor, single Formex covered; one winding, single layer, untapped, unshielded; ceramic form, iron core; coil dimen excluding mtg fixtures and tuning devices 2 in. lg by 5/8 in. diam; coil form dimen 2 in. lg by 5/8 in. diam; adjustable tuning, adjustable iron slug; screwdriver adjustment on core and wrench adjustment on thd shaft attached to core; two solder lug type term located outside coil form; one 3/8 in. -32 thd mtg bushing 3/8 in. lg; dwg no. NL-980705-2-4 stamped on coil form; CBTL part/dwg NL-980705-2-4 | Buffer Band 6 Tank (19.0 to 26.0 mc) |
| L-1303 | N16-C-76613-8381 | COIL, RADIO FREQUENCY: 0.82 uh at 25 mc with slug withdrawn; 10 turns, no. 14 AWG copper conductor, single Formex covered conductor; one winding, single layer winding, untapped, unshielded; ceramic form; iron core; coil dimen excluding mtg fixtures and tuning devices 2 in. lg, 5/8 in. diam; coil form dimen 2 in. lg, 5/8 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment on core and wrench adjustment on thd shaft attached to core; two solder lug type term located outside coil form; one 3/8 in. -32 thd mtg bushing 3/8 | Buffer Band 5 Tank (11.0 to 19.0 mc) |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force. | Name and Description | Locating Function |
|------------------|--|---|--|
| L-1303 (cont) | | in. lg; dwg no. NL-980705-2-3 stamped on coil form; CBTL part/dwg NL-980705-2-3 | |
| L-1304 | N16-C-76560-7203 | COIL, RADIO FREQUENCY: 2.5 uh at 7.9 mc with slug withdrawn; 18 turns, no. 20 AWG copper conductor, single Formex covered conductor; one winding, single layer winding, untapped, unshielded, ceramic form, iron core; coil dimen excluding mtg fixtures and tuning devices 2 in. lg, 5/8 in. diam; coil form dimen 2 in. lg, 5/8 in. diam; adjustable tuning, iron slug, screwdriver adjustment on core, wrench adjustment on thd shaft attached to core; two solder lug type term mtd outside coil form; one 3/8 in. -32 thd mtg bushing 3/8 in. lg; dwg no. NL-980705-2-2 stamped on coil form; CBTL part/dwg NL-980705-2-2 | Buffer Band 4 Tank (5.0 to 11.0 mc) |
| L-1305 | N16-C-76617-4406 | COIL, RADIO FREQUENCY: 14 uh at 2.5 mc with slug withdrawn; 47 turns, no. 26 AWG copper conductor, single Formex covered conductor; one winding, single layer winding, untapped, unshielded ceramic form, iron core; coil dimen excluding mtg fixtures and tuning devices 2 in. lg, 5/8 in. diam; coil form dimen 2 in. lg, 5/8 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment on core, wrench adjustment on thd shaft attached to core; two solder lug type term located outside coil form; one 3/8 in. -32 thd mtg bushing 3/8 in. lg; dwg no. NL-980705-2-1 stamped on coil form; CBTL part/dwg NL-980705-2-1 | Buffer Band 3 Tank (2.0 to 5.0 mc) |
| L-1306 | N16-C-74640-3225 | COIL, RADIO FREQUENCY: 2.5 mh at 1000 cps, 28 ohms DC resistance, 125 ma; 397 turns, no. 36 AWG copper conductor, single nylon enamel insulation; one winding, pie universal winding, untapped, unshielded, ceramic form, air core; coil dimen not including term mtg attachments and tuning devices 1-1/8 in. OD, 19/32 in. lg; coil form dimen 1-1/8 in. OD, 19/32 in. lg; two solder lug type term located outside coil form; mtg hole through eyelet in center of core; high voltage filter; resistance and inductance tolerances $\pm 5\%$; CMM cat. no. 640, part/dwg no. B60050; CBTL part/dwg NL-982818-1 | B+ Filter V-1302 |
| L-1307 | | Same as L-1302 | IPA Band 6 Tank |
| L-1308 | | Same as L-1303 | IPA Band 5 Tank |
| L-1309 | | Same as L-1304 | IPA Band 4 Tank |
| L-1310 | | Same as L-1305 | IPA Band 3 Tank |
| L-1311 | N16-C-75106-9315 | COIL, RADIO FREQUENCY: 10 mh at 1000 cps, 95.0 ohms DC resistance, 125 ma; 332 turns per pie, total turns 1660, no. 36 AWG copper conductor, single nylon enamel insulation; one winding, 5 pie universal winding, untapped, unshielded, ceramic form, air core; coil dimen excluding term mtg attachments and tuning devices, 11/16 in. diam, 1-1/2 in. lg; coil form dimen 1-1/2 in. lg, 1/4 in. diam; two clamp type term with flat ribbon leads 1-1/4 in. lg at ends of ceramic form; used as grid choke; resistance and inductance tolerance $\pm 5\%$; mfr by CMM cat. no. 4540, part/dwg no. B45010; CBTL part/dwg NL-982759-1 | Grid Choke V-1304 |
| L-1312 | | Not Used. | |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---|
| L-1313 | N16-C-74010-2114 | COIL, RADIO FREQUENCY: 0.45 mh at 0.8 to 2.0 mc; 6 ohms DC resistance, 300 ma; 113 ft. no. 26 AWG copper conductor double cotton covered; single bank wound, four layers, untapped, unshielded, textolite no. 1422 or equal form; coil dimen 2-1/2 in. lg, 7/8 in. diam less term; coil form dimen 2-1/2 in. lg, 7/8 in. diam; 2 term, CAMQ X-1582B located 3/16 in. from each end; two no. 6-32 thd mtg holes, 1/2 in. d; marked NL-982571-1; CBTL part/dwg NL-982571-1 | Plate Choke V-1304 |
| L-1314 | N16-C-73684-7708 | COIL, RADIO FREQUENCY: 85 uh at 0.5 mc, 4.6 ohms DC resistance, 1 amp; 192 turns, no. 32 AWG copper conductor, bare; one winding, single layer, untapped, unshielded, ceramic form, air core; coil dimen 6 in. lg, 9/16 in. diam; coil form dimen 6 in. lg, 9/16 in. OD, 5/16 in. ID; two solder lug type term located outside coil form; mtg brackets on each end of coil; dwg no. NL-982758-1 stamped on each coil; COM type Z-7, part/dwg no. A-1320-E; CBTL part/dwg NL-982758-1 | RF Plate Choke V-1304 |
| L-1315 | N16-C-73509-2812 | COIL, RADIO FREQUENCY: 44.0 uh at 1 mc, 3.08 ohms DC resistance, 600 ma; 130 turns no. 33 AWG copper conductor, single enamel covered; one winding, single layer, untapped, unshielded, textolite coil form, air core; coil dimen excluding term 2 in. lg, 1/2 in. OD; 2 flexible wire term leads located outside of coil form; term leads used for mtg; dwg no. NL-982757-1 stamped on coil form; COM type Z-14 modified, spec 32829; CBTL part/dwg NL-982757-1 | RF Plate Choke V-1304 |
| L-1316 | N16-C-73379-7020 | COIL, RADIO FREQUENCY: 26 uh at 2.5 mc, 1.2 amp; 90 turns approx, no. 28E B & S copper conductor, single enamel covered conductor; single winding, one layer, helix wound, untapped, unshielded, ceramic form, air core; coil form dimen excluding term 2 in. lg, 1/2 in. OD; two flexible wire term no. 18 or no. 19 B & S ga. tinned copper wire located outside coil form; mtd by its term leads; dwg no. NL-983952-1 stamped on coil form; CBTL part/dwg NL-983952-1 | RF Plate Choke V-1304 (11.0 to 26.0 mc) |
| L-1317 | N16-C-71963-9758 | COIL, RADIO FREQUENCY: 7-1/2 turns, 3/16 in. OD, .032 wall, silver pl copper tubing; one winding, single layer, untapped, unshielded, steatite form, air core; coil dimen excluding term and mtg attachments 4-1/2 in. lg, 2 in. diam; coil form dimen 4-1/2 in. lg, 1-3/4 in. diam; two solder lug type term, one located inside coil form, one located outside coil form; four no. 8-32 thd mtg holes; part no. L-1317 stamped on coil form; CBTL part/dwg NL-982110-3 | Power Amplifier Filter Band 6 (19.0 to 26.0 mc) |
| L-1318 | N16-C-72095-9052 | COIL, RADIO FREQUENCY: 11 turns, 1/8 in. OD, silver pl copper tubing; one winding, single layer, untapped, unshielded, steatite form, air core; coil dimen excluding term and mtg attachments 4-1/2 in. lg, 1-15/16 in. diam; coil form dimen 4-1/2 in. lg, 1-3/4 in. diam; two solder lug type term, one located inside and one outside coil form; four no. 8-32 thd mtg holes; part no. L-1318 stamped on coil form; CBTL part/dwg NL-982109-3 | Power Amplifier Filter Band 5 (11.0 to 19.0 mc) |
| L-1319 | N16-C-72233-7810 | COIL, RADIO FREQUENCY: 17 turns, no. 14 AWG silver clad copper wire; one winding, single layer, untapped, unshielded, steatite form, air core; coil dimen excluding term and mtg attachments 4-1/2 in. lg, 1.836 in. diam; coil form dimen 4-1/2 in. lg, 1-3/4 in. diam; two solder lug type term, one inside and one outside coil form; four no. 8-32 thd mtg holes; part no. L-1319 stamped on coil form; CBTL part/dwg NL-982108-3 | Power Amplifier Filter Band 4 (5.0 to 11.0 mc) |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--|
| L-1320 | N16-C-72586-9358 | COIL, RADIO FREQUENCY: 43 turns, no. 18 AWG silver clad copper wire; one winding, single layer, untapped, unshielded, steatite form, air core; coil dimen excluding term and mtg attachments 4-1/2 in. lg, 1.804 in. diam; coil form dimen 4-1/2 in. lg, 1-3/4 in. diam; two solder lug type term, one inside and one outside coil form; four no. 8-32 thd mtg holes; part no. L-1320 stamped on coil form; CBTL part/dwg NL-982107-3 | Power Amplifier Filter Band 3 (2.5 to 5.0 mc) |
| L-1321 | | Not Used | |
| L-1322 | | Not Used | |
| L-1323 | N16-C-71815-3539 | COIL, RADIO FREQUENCY: 4-1/2 turns, 3/16 in. OD by .032 in. wall, silver plated copper tubing; one winding, single layer, adjustable tap located approx at 5/8 turn from finish of winding, unshielded, steatite form, air core; coil dimen excluding term and mtg attachments 3-1/2 in. lg, 2 in. diam; coil form dimen 3-1/2 in. lg, 1-3/4 in. diam; three solder lug type term, one inside coil form, one outside coil form and one located at tapped point of coil; four no. 8-32 thd mtg holes, two at each end of coil form; part no. L-1323 stamped on coil form; CBTL part/dwg NL-982114-3 | Power Amplifier Antenna Matching Band 6 (19.0 to 26.0 mc) |
| L-1324 | N16-C-71880-7304 | COIL, RADIO FREQUENCY: 6-1/2 turns, 1/8 in. OD, silver pl copper tubing; one winding, single layer, adjustable tap located approx at 1-1/4 turn from finish of winding, unshielded, steatite form, air core; coil dimen excluding term and mtg attachments 3-1/2 in. lg, 1-15/16 in. diam; coil form dimen 3-1/2 in. lg, 1-3/4 in. diam; three solder lug type term, one located inside coil form, one located outside coil form and one located at tapped point of coil; four no. 8-32 thd mtg holes, two located at each end of coil form; part no. L-1324 stamped on coil form; CBTL part/dwg NL-982113-3 | Power Amplifier Antenna Matching Band 5 (11.0 to 19.0 mc) |
| L-1325 | N16-C-72095-1042 | COIL, RADIO FREQUENCY: 11 turns, no. 14 AWG copper wire; one winding, single layer, tapped at 1, 1-1/4 and 1-1/2 turns, unshielded, steatite form, air core; coil dimen excluding term and mtg attachments 3-1/2 in. lg, 1.836 in. diam; coil form dimen 3-1/2 in. lg, 1-3/4 in. diam; five solder lug type term, two located inside coil form and three located at tapped points of coil; four no. 8-32 thd mtg holes, two located at each end of coil form; part no. L-1325 stamped on coil form; CBTL part/dwg NL-982112-3 | Power Amplifier Antenna Matching Band 4 (5.0 to 11.0 mc) |
| L-1326 | | Not Used | |
| L-1327 | N16-C-72392-9641 | COIL, RADIO FREQUENCY: 27 turns, no. 18 AWG copper wire; one winding, single layer, tapped at 3-1/8, 4 and 4-7/8 turns, unshielded, steatite form, air core; coil dimen excluding term and mtg attachments 3-1/2 in. lg, 1.804 in. diam; coil form dimen 3-1/2 in. lg, 1-3/4 in. diam; five solder lug type term, two located inside coil form and three located at tapped points of coil; four no. 8-32 thd mtg holes, two located at each end of coil form; part no. L-1327 stamped on coil form; CBTL part/dwg NL-982111-3 | Power Amplifier Antenna Matching Band 3 (2.0 to 5.0 mc) |
| L-1328 | | Not Used | |
| L-1329 | N16-C-73583-5003 | COIL, RADIO FREQUENCY: 52 uh at 2.5 mc, 56 turns, no. 20 AWG copper conductor, single Formex covered; one winding, single layer, tapped at six turns, unshielded, bakelite form, air core; coil dimen excluding term 3-1/4 in. lg, 1.31 in. diam; | Power Amplifier Antenna Matching Band 2 (0.8 to 2.0 mc) |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|---|
| L-1329 (cont) | | coil form dimen 3-1/4 in. lg, 1-1/4 in. diam; two wire pigtail term located at either end; mtd by two mtg plates, one at each end; dwg no. NL-981966-2-4 stamped on coil form; CBTL part/dwg NL-981966-2-4 | |
| L-1330 | | Not Used | |
| L-1331 | N16-C-73993-5384 | COIL, RADIO FREQUENCY: 245 uh at 790 kc; 130 turns, no. 26 AWG copper wire, single Formex covered conductor; one winding, single layer, tapped at 10 turns, unshielded, bakelite form, air core; coil dimen excluding term 3-1/4 in. lg, 1.28 in. diam o/a; coil form dimen 3-1/4 in. lg, 1-1/4 in. diam; 3 term, wire pigtail type, located at either end of coil and at tap; mtd by two mtg plates, one on each end of coil form; dwg no. NL-981966-2-3 stamped on coil form; CBTL part/dwg NL-981966-2-3 | Power Amplifier Antenna Matching Band 1 (0.3 to 0.8 mc) |
| L-1332 | | Same as L-1306 | B+ Filter V-1301 |
| L-1333 | N16-C-74836-1694 | COIL, RADIO FREQUENCY: 4.0 mh, 10 ohms DC resistance, 600 ma; 720 turns, no. 28CSC copper wire; four pie universal wound, tapered, unshielded, ceramic form, air core; coil dimen excluding term 2-1/2 in. lg, 1-3/16 in. diam; coil form dimen 2-1/2 in. lg, 1/2 in. OD; two solder lug type term; two mtg brackets, one at each end; CMM no. 4551; CBTL part/dwg NL-982572-1 | RF Plate Choke V-1304 (0.3 to 0.8 mc) |
| L-1334 | N16-C-73751-3234 | COIL, RADIO FREQUENCY: 90 uh; 70 turns, no. 10/41 AWG Litz copper wire, single enamel silk covered conductor; one winding, one pie universal wound, untapped, unshielded, steatite form; coil dimen excluding term 43/64 in. diam, 1-1/8 in. wd; coil form dimen 1-1/8 in. lg, 1/2 in. diam; two term, one solder lug type, one wire pigtail type, solder lug located at top of coil form, wire pigtail on opposite side of coil form; one no. 8-32 thd mtg hole located at bottom of coil form; CBTL part/dwg NL-981865-1 | Buffer Band 2 Tank (0.3 to 0.8 mc) |
| L-1335 | | Same as L-1301 | IPA Band 1 Tank |
| L-1336 | | Same as L-1334 | IPA Band 2 Tank |
| L-1337 | N16-C-76614-4102 | COIL, RADIO FREQUENCY: 10 uh at 2.5 mc with slug withdrawn; 35 turns, no. 26 AWG copper wire, single Formex covered conductor; single winding, single layer, untapped, unshielded, ceramic form, iron core; coil dimen excluding mtg fixtures and tuning devices 2 in. lg, 5/8 in. diam; coil form dimen 2 in. lg, 5/8 in. diam; adjustable tuning, screwdriver adjustment on core and wrench adjustment on thd shaft attached to core; two solder lug type term located outside coil form; one 3/8 in. -32 thd mtg bushing 3/8 in. lg; dwg no. NL-980705-2-5 stamped on coil form; CBTL part/dwg NL-980705-2-5 | Harmonic Trap Band 3 (2.0 to 5.0 mc) |
| L-1338 | N16-C-76559-2640 | COIL, RADIO FREQUENCY: 2.25 uh at 7.9 mc with slug withdrawn; 16 turns, no. 20 AWG copper wire, single Formex covered conductor; single winding, single layer, untapped, unshielded, ceramic form, iron core; coil dimen excluding mtg fixtures and tuning devices 2 in. lg, 5/8 in. diam; coil form dimen 2 in. lg, 5/8 in. diam; adjustable tuning, screwdriver adjustment on core and wrench adjustment on thd shaft attached to core; two solder lug type term located outside coil form; one 3/8 in. -32 thd mtg bushing 3/8 in. lg; dwg no. NL-980705-2-6 stamped on coil form; CBTL part/dwg NL-980705-2-6 | Harmonic Trap Band 4 (5.0 to 11.0 mc) |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---|
| L-1339 | N16-C-73583-5001 | COIL, RADIO FREQUENCY: 52 uh at 2.5 mc; 56 turns, no. 20 AWG copper wire, Formex insulation; single winding, single layer, untapped, unshielded, bakelite form, air core; coil dimen excluding term 3-1/4 in. lg, 1.31 in. diam; coil form dimen 3-1/4 in. lg, 1.25 in. diam; two wire pigtail type term located on either end of coil; mtd by two mtg plates one on each end of coil form; dwg no. NL-981966-2-2 stamped on coil form; CBTL part/dwg NL-981966-2-2 | Power Amplifier Filter Band 2 (0.8 to 2.0 mc) |
| L-1340 | | Same as L-1339 | Power Amplifier Filter Band 2 |
| L-1341 | N16-C-73993-5382 | COIL, RADIO FREQUENCY: 245 uh at 790 kc; 130 turns, no. 26 AWG copper, single Formex covered conductors; one winding, single layer, untapped, unshielded, bakelite form, air core; coil dimen excluding term 3-1/4 in. lg, 1.28 in. diam; coil form dimen 3-1/4 in. lg, 1-1/4 in. diam; two wire pigtail term located on either end of coil; mtd by two mtg plates, one at each end of coil form; dwg no. NL-981966-2-1 stamped on coil form; CBTL part/dwg NL-981966-2-1 | Power Amplifier Filter Band 1 (0.3 to 0.8 mc) |
| L-1342 | | Same as L-1341 | Power Amplifier Filter Band 1 |
| L-1343 | N16-R-29238-4571 | REACTOR: filter choke, one section; 10 hy, 150 ma DC; 198 ohms DC resistance; 3000v RMS test voltage; hermetically sealed, metal case; o/a dimen 3-3/8 in. lg, 3-1/4 in. wd, 4-15/16 in. h; four no. 10-32 thd inserts for mtg, 3/8 in. d on 2-1/2 in. by 2-1/4 in. mtg/c; two solder lug type term located at bottom; conforms to MIL-T-27, Grade 1, Class A; CAVM dwg no. S-280-2; CBTL part/dwg NL-980624-1 | Choke Screen V-1304 |
| L-1344 | | Same as L-1311 | Grid Choke V-1302 |
| L-1345 | Shop Manufacture | COIL, RADIO FREQUENCY: self inductance 0.1 uh; 4 turns, no. 16 AWG soft bare copper, tinned conductor; one winding, single layer, untapped, unshielded, air core; 1/2 in. ID, 0.6 in. OD, approx 2-1/4 in. lg excluding term. o/a dimen; one solder lug term. located at one end of coil; CBTL part/dwg NL-901613-1 | Suppression Choke |
| M-1301 | N17-M-21869-5025 | AMMETER (METER, ARBITRARY SCALE): panel mtd; DC; microamperes, 0 to 50 CW, 0 to 100 CW, graduated in increments of 10 for 0 to 50 scale and in increments of 20 for 0 to 100 scale; round, plastic; flush mtd, flange 3-1/2 in. wd, 2.80 in. body diam, 1.66 in. body depth from mtg surface excluding term; $\pm 2\%$ accuracy at full scale reading; 2500 ohms $\pm 1\%$ across term; calibrated for non-magnetic panel; magnetic movement; black numerals on white background; self contained; three mtg holes 0.150 in. diam spaced 120° apart on a 1.58 in. radius; two stud term 1/4 in. -20 NF-2 thd 0.69 in. lg; CV per spec JAN-I-6, similar to JAN type MR35W106SPEC except for scale; CBTL part/dwg NL-982280-1 | Voltage Metering |
| M-1302 | N17-M-18250-8256 | AMMETER: RF thermoammeter type; panel mtd; RF amperes; 0 to 5 CW; graduated in increments of tenths; linear expanding scale; round, plastic; flush mtd, flange 3-1/2 in. wd; frequency effect less than 2% up to 65 mc; calibrated for non-magnetic panel; internal thermocouple; black numerals on white background; per spec JAN-I-6; JAN type MR35W005RLAA | Transmission Line Current Meter |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---------------------------------------|
| M-1303 | | Same as M-1301 | PA Current Metering V-1304 |
| M-1304 | | Same as M-1301 | IPA Current Metering V-1302 |
| N-1301 | Low Failure Item | CARD, DIAL NUMBER: aluminum w/bronze bearing and steel hub; numerals etched in aluminum; black background; numerals 1 to 100, 101 lines equally spaced along edge; two indents on outer edge at 180° and 235° from 0; round, 3 in. diam, 1/2 in. thk; three no. 4-40 tapped holes for mtg to sprocket; CBTL part/dwg NL-900187-1 | For PA Dial Drive |
| N-1302 | Low Failure Item | CARD, DIAL NUMBER: aluminum w/bronze bearing and steel hub; numerals etched in aluminum; black background; numerals 1 to 100, 101 lines equally spaced along edge; two indents on outer edge at 135° and 180° from 0; round, 3 in. diam, 1/2 in. thk; three no. 4-40 tapped holes for mtg to sprocket; CBTL part/dwg NL-900173-1 | For IPA Dial Drive |
| O-1301 | N17-C-800487-451 | CLIP, ELECTRICAL: grid plate style 7, MBCA Ref Dwg Group 37; steel; 7/8 in. lg, 3/8 in. wd, 3/8 in. h, 1 solder lug type term; used as tube plate clip; CNA type no. 24 | u/w V-1302 |
| O-1302 | N17-C-814129-975 | CLIP, ELECTRICAL: aluminum; supersat finish; 1-3/4 in. lg, 1-1/2 in. wd, 3/8 in. h o/a dimen; 1 no. 6-32 tapped hole for term; 8 radial fins equally spaced 45° apart; one 0.366 in. diam hole in center of clip; two no. 6-32 tapped holes 90° apart for mtg; used as electron tube plate clip; CBTL part/dwg NL-982540-2 | u/w V-1304 |
| O-1303 | N16-S-34607-6039 | SHIELD, ELECTRON TUBE: brass, nickel pl; cylindrical shape; 2-1/4 in. lg, 0.958 in. diam o/a dimen; bayonet mtg; per spec. JAN-S-28A; JAN type TS102U03; same as O-1021 | u/w V-1303 |
| O-1304 | N17-I-19006-8801 | IMPELLER, FAN, CENTRIFUGAL: multiblade; forward curve blades; steel, cad pl plus iridite; single width; 24 blades; CCW; o/a dimen 4-1/4 in. diam by 2-1/32 in. wd; single inside hub, 1/4 in. bore; mtd by two 1/4 in. -28 set screws; CCBN part no. AO-1903-02; CBTL part/dwg NL-900532-12 item 2 | p/o B-1306 |
| O-1305 | N77-B-99999-0237 | BEARING, BALL, BELL CRANK: single row non-loading groove type; axial; plain type; light duty; 1/2 in. ID, 1-1/8 in. OD, 1/4 in. wd dimen of bearing only; o/a dimen 1-3/8 in. sq, 0.343 in. thk; eight balls; tight fit; ABEC 1 tol; CGM part R8X1A w/CBTL housing; CBTL part/dwg NL-900296-1 | p/o PA Tuning Drive |
| O-1306 | N17-C-812004-101 | RETAINER, tube ring: steel, cad pl; 1-29/32 in. lg by 1/2 in. h; two 9/64 in. diam mtg holes spaced 1-1/2 in. c to c; CUF no. 52329; CBTL part/dwg NCP-97-1A-7 | u/w V-1301 |
| O-1307 | N16-G-414685-451 | GEAR, BEVEL: brass, chrome pl; variable capacitor shaft driving; straight teeth; 24 teeth; 24 pitch, 1.000 in. pitch diam; face at 45° angle; 1.060 in. OD, 0.3125 in. ID, approx 9/16 in. thk; hub approx 9/16 in. diam; two 8-32 tapped holes 90° apart in hub for set screws; CBH part G464 modified; CBTL part/dwg NL-900322-1 | Drive for C-1323, p/o PA Tuning Drive |
| O-1308 | N17-C-99999-1191 | COUPLING, SHAFT, FLEXIBLE: multijaw type; female; brass, cad pl, 1 in. OD, 9/16 in. lg o/a; incl floating part; 0.240 in. wd by 7/32 in. d keyway across diam; 0.250 in. , 0.187 in. axial mtg hole; two no. 6-32 tapped holes 90° apart; red dot on one end of keyway; CBTL part/dwg NL-900577-1 | p/o IPA Drive Assy |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|-------------------------|
| O-1309 | N17-C-98421-1601 | COUPLING, SHAFT, RIGID: brass, cad pl; 1 in. OD, 3/8 in. thk o/a; 0.234 in. wd by 3/32 in. d key across diam; 0.250 in., 0.187 in. axial mtg hole; two no. 6-32 tapped holes 90° apart; red dot on one end of key; CBTL part/dwg NL-900578-1 | p/o IPA Drive Assy |
| O-1310 | N17-S-99999-0597 | SPRING, HELICAL TORSION: single torsion, Ref Dwg Group 67; 0.041 in. diam music wire, nickel pl finish; 0.953 in. lg, 0.469 in. wd, 0.406 in. thk o/a dimen; 2-1/4 turns, RH turns; 1/8 in. lg ends, 90° bend; CBTL part/dwg NL-900199-1 | p/o PA Dial Drive Assy |
| O-1311 | N16-G-438548-582 | GEAR, SPUR: steel, nickel pl finish; straight teeth; 24 teeth; 14.5° pressure angle; 32 pitch, 0.750 in. pitch diam; 13/16 in. OD, 19/64 in. bore, 1/2 in. thk; straight face; hub extends 9/32 in. beyond face of gear, 21/32 in. OD; one no. 4-40 set screw and one 5/64 in. drill hole 90° apart, 1/8 in. front end of hub; similar to CBH part H3224; CBTL part/dwg NL-900278-1 | p/o IPA Gear Box Assy |
| O-1312 | N16-G-505001-238 | GEAR ASSEMBLY: c/o two spur gears mtd on one hub; CBH part 106 gears modified, brass, straight teeth, 48 teeth, 32 pitch, 1-1/2 in. pitch diam, 1/4 in. diam, 1/16 in. d bore; bronze hub 5/8 in. diam, one no. 4-40 tap hole and one 5/64 in. drill hole spaced 90° apart; 0.3125 in. ID; 2 elongated spring windows, 0.437 in. lg, 1/4 in. wd o/a, located on side of each gear; CBTL part/dwg NL-900272-1 | p/o IPA Gear Box Assy |
| O-1313 | N17-S-99999-0599 | SPRING, HELICAL COMPRESSION: for gear locking; 0.026 in. diam music wire, cad pl; 11/64 in. ID, 5/8 in. lg o/a; 10 turns, LH or RH turns; pointed ends; CBTL part/dwg NL-900276-1 | p/o IPA Gear Box Assy |
| O-1313.1 | | Same as O-1313 | p/o IPA Gear Box Assy |
| O-1314 | Low Failure Item | SPROCKET, CHAIN: brass, nickel pl; round, 35 teeth; 1.725 in. OD, 3/8 in. wd o/a dimen; hub 5/8 in. diam, 1/4 in. wd, 5/16 in. diam center hole, 5/64 in. diam and no. 4-40 tap holes located 1/8 in. from face of hub, spaced 90° apart; shaft mtd by means of 5/16 in. diam hole through center; CBKH type 9100-35 modified per CBTL part/dwg NL-900279-1 | p/o IPA Gear Box Assy |
| O-1315 | Low Failure Item | SPROCKET, CHAIN: brass, nickel pl; round, 19 teeth; 0.972 in. OD, 3/8 in. wd o/a dimen; hub 1/2 in. diam, 1/4 in. wd, 0.250 in. diam center hole, 0.089 in. diam and no. 4-40 tap holes located 1/8 in. from face of hub, spaced 90° apart; shaft mtd by means of 0.250 in. diam hole through center; CBKH type 9100-19 modified per CBTL part/dwg NL-900312-1 | Drives IPA Tuning Shaft |
| O-1316 | N16-G-431850-419 | GEAR, SPUR: bronze gear and hub; straight teeth; 48 teeth; 32 pitch, 1-1/2 in. pitch diam; o/a dimen 9/16 in. thk by 1-5/32 in. OD; straight face; hub extends 3/8 in. beyond face of gear, 3/4 in. OD w/0.3125 in. diam hole for mtg; two holes, one no. 8-32 thd, other 0.063 in. diam hole at 90° apart; CBTL part/dwg NL-981092-1 | p/o PA Tuning Drive |
| O-1316.1 | | Same as O-1316 | p/o PA Tuning Drive |
| O-1317 | N16-T-43276-1190 | SHAFT SUB-ASSEMBLY (TRANSMITTER SUB-ASSEMBLY): c/o shaft w/two mtd sprockets and lock spider; approx 1.75 in. lg by 0.800 in. wd by 0.800 in. h; one sprocket, brass, 7 teeth, 0.395 in. OD by 1/4 in. wd; one sprocket, brass, 10 teeth, 0.543 in. OD by 3/8 in. wd; sprockets mtd to shaft by Groov-Pins and set screws; CBTL part/dwg NL-900191-1 | p/o PA Dial Drive Assy |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|----------------------------|
| O-1318 | N16-T-43276-1191 | SHAFT SUB-ASSEMBLY (TRANSMITTER SUB-ASSEMBLY): c/o shaft w/two mtd sprockets and lock spider; approx 1.75 in. lg by 0.800 in. wd by 0.800 in. h; one sprocket, brass, 7 teeth, 0.395 in. OD by 1/4 in. wd; one sprocket; brass, 14 teeth, 0.735 in. OD by 13/32 in. wd; sprockets mtd to shaft by Groov-Pins and set screw; CBTL part/dwg NL-900180-1 | p/o IPA Dial Drive Assy |
| O-1319.1 | N17-C-921001-109 | CORE, ADJUSTABLE TUNING: iron powdered core, cylindrical shape; 2 in. lg excluding thd rod projecting axially from one end, 15/16 in. diam core; 1-3/8 in. nickel pl brass rod w/ no. 8-32 thd varnished to withstand 200 hour salt spray; CAI type 560; CBTL part/dwg NL-982092-1-2 | u/w L-1329 |
| O-1319.2 | | Same as O-1319.1 | u/w L-1339 |
| O-1319.3 | | Same as O-1319.1 | u/w L-1340 |
| O-1320.1 | N17-C-921001-108 | CORE, ADJUSTABLE TUNING: iron powdered core, cylindrical shape; 2 in. lg excluding thd rod projecting axially from one end, 15/16 in. diam core; 1-3/8 in. lg nickel pl brass rod w/ no. 8-32 thd varnished to withstand 200 hour salt spray; CAI type 520; CBTL part/dwg NL-982092-1-1 | u/w L-1331 |
| O-1320.2 | | Same as O-1320.1 | u/w L-1341 |
| O-1320.3 | | Same as O-1320.1 | u/w L-1342 |
| O-1321 | N17-C-98378-3799 | COUPLING, FLEXIBLE: disc shape insulator w/metal bushing on either side; approx o/a dimen 1-1/16 in. diam, 9/16 in. wd; one 1/4 in. diam hole drilled thru insulation for shaft mtg; free from backlash; CNA part TX-10 modified per CBTL part/dwg NL-981903-1 | IPA Shaft Coupling |
| O-1321.1 | | Same as O-1321 | IPA Shaft Coupling |
| O-1322 | N16-G-431250-365 | GEAR, SPUR: stainless steel; straight teeth, 18 teeth, 32 pitch, 0.563 in. pitch diam, 14-1/2° pressure angle, straight face; 0.6256 in. OD by 0.187 in. thk; hub extends 5/16 in. beyond face of gear, 15/32 in. OD w/0.3129 in. diam bore, 0.125 in. wd slot 3/16 in. d; CBTL part/dwg NL-981163-1 | p/o PA Tuning Drive |
| O-1322.1 | | Same as O-1322 | p/o PA Tuning Drive |
| O-1322.2 | | Same as O-1322 | p/o PA Tuning Drive |
| O-1323 | N16-G-500001-347 | GEAR ASSEMBLY: c/o spur pinion w/hub silver soldered to spur gear w/o hub; 0.8126 OD by 15/32 in. lg o/a; pinion straight teeth, 16 teeth, 32 pitch, 0.500 in. pitch diam, 3/16 in. thk, 20° pressure angle, straight face, hub 0.3125 in. diam, 3/16 in. diam bore; gear straight teeth, 24 teeth, 32 pitch, 0.750 in. pitch diam, 14-1/2° pressure angle, 0.3125 in. bore, 3/16 in. thk, straight face; CBTL part/dwg NL-981772-1 | p/o PA Tuning Drive |
| O-1324 | Low Failure Item | SPROCKET, CHAIN: brass, nickel pl; round, 11 teeth; o/a dimen 0.591 in. OD, 3/8 in. wd; hub 3/8 in. OD, 1/4 in. wd, 0.2187 in. diam shaft hole; one no. 4-40 tapped hole and one 3/64 in. drilled hole thru one wall only for set screw and pin mtg; CBKH type 9100-11 modified per CBTL part/dwg NL-901034-1 | p/o Right Angle Drive Assy |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|---|
| O-1325 | Low Failure Item | SPROCKET, CHAIN: brass, nickel pl; round, 33 teeth, 1-5/8 in. diam, 0.375 in. wd; hub 3/4 in. OD, 1/4 in. wd, 0.312 in. diam shaft hole; one no. 4-40 tapped hole and one 5/64 in. drilled hole thru one wall only for set screw and pin mtg; CBKH type 9100-33 modified per CBTL part/dwg NL-901033-1 | p/o Right Angle Drive Assy |
| O-1325.1 | | Same as O-1325 | p/o Right Angle Drive Assy |
| O-1326 | Low Failure Item | SPROCKET ASSEMBLY, CHAIN: c/o sprocket mtd on bushing; sprocket brass, nickel pl, round, 19 teeth, 0.972 in. OD, 25/64 in. wd, 0.375 in. diam bore; bushing stainless steel, 1-1/8 in. lg, 1/2 in. diam o/a, 5/16 in. lg, 0.100 in. wd slot on sides of one end, 0.250 in. diam bore; no. 4-40 tap hole and one 1/16 in. diam hole thru one wall of sprocket hub; CBTL part/dwg NL-900134-1 | Detent Assy Drive for S-1301 and S-1302 |
| O-1327 | N16-R-99999-0864 | RING, RETAINING: steel, SAE 1060-1090; plain, iridite dip; for shaft diam 5/16 in. ID 0.281 in., 0.025 in. thk; installed by means of special pliers no. 2; CCDE truarc part no. 5100-31-SMI | p/o Right Angle Drive Assy |
| O-1328 | Low Failure Item | BEARING, SLEEVE: porous bronze; flange type; 1/2 in. OD, 5/16 in. ID, 3/8 in. lg o/a; flange is 0.6875 in. OD, 3/32 in. thk; CBH part no. FB-58-3 | p/o Right Angle Drive Assy |
| O-1328.1 | | Same as O-1328 | p/o Right Angle Drive Assy |
| O-1328.2 | | Same as O-1328 | p/o Right Angle Drive Assy |
| O-1328.3 | | Same as O-1328 | p/o Right Angle Drive Assy |
| O-1329 | N17-S-99999-0598 | SPRING, HELICAL, TORSION: no. 10 Washburn & Moen gauge music wire, nickel pl; 2.389 in. lg, 1.250 in. ID o/a; 16.7 turns, LH turns, semi-hook type term, one located on each end of spring; term bent on 5/32 in. radius; CBTL part/dwg NL-900303-1 | u/w IPA Tuning Shaft Racks |
| O-1330 | N16-R-99999-0863 | RING, RETAINING: steel, SAE 1060-1090; plain, iridite dip; for shaft diam 7/32 in., ID 0.196 in., 0.015 in. thk; installed by means of special pliers no. 0018; CCDE truarc part no. 5100-21-SMI | p/o Right Angle Drive Assy |
| O-1330.1 | | Same as O-1330 | p/o Right Angle Drive Assy |
| O-1331 | N17-C-480858-962 | SPROCKET, CHAIN: brass, nickel pl; round, 10 teeth; o/a dimen 0.543 in. OD, 3/8 in. wd; hub 5/16 in. OD, 1/4 in. wd; mtd by means of 0.2187 in. diam hole thru center, free running on shaft; CBKH type 9100-10 modified per CBTL part/dwg NL-901035-1 | p/o Right Angle Drive Assy |
| O-1331.1 | | Same as O-1331 | p/o Right Angle Drive Assy |
| O-1332 | N17-S-99999-0596 | SPRING, HELICAL, TORSION: 0.041 in. diam music wire, nickel pl finish; 31/32 in. lg, 0.489 in. wd, 0.50 in. thk o/a dimen; 2-1/4 turns; LH turns; 1/8 in. lg ends, 90° bend; CBTL part/dwg NL-900103-1 | p/o IPA Dial Drive Assy |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|-----------------------------|
| O-1333 | N16-G-431530-441 | GEAR, SPUR: phosphor bronze, straight teeth, 32 teeth, 32 pitch, 1 in. pitch diam, 20° pressure angle, 0.3125 in. diam bore, 9/16 in. thk, 1.0626 in. OD, straight face; hub extends 3/8 in. beyond face of gear, 3/4 in. OD; one no. 8-32 tapped hole in hub thru one wall only, one 0.089 in. diam hole drilled 90° from first in one wall only; CBTL part/dwg NL-981776-1 | p/o PA Tuning Drive |
| O-1334 | Low Failure Item | SPROCKET, CHAIN: brass, nickel pl; round, 20 teeth; 1.020 in. OD, 0.125 in. wd o/a dimen; three mtg holes 0.125 in. diam elongated spaced 120° apart, shaft hole in center 0.3125 in. diam; CBKH type 9100-20 modified per CBTL part/dwg NL-900105-1 | p/o IPA Dial Drive Assy |
| O-1335 | Low Failure Item | SPROCKET, CHAIN: brass, nickel pl; round, 35 teeth; 1.725 in. OD, 0.125 in. thk o/a dimen; three mtg holes 0.125 in. diam elongated spaced 120° apart, shaft hole in center 0.3125 in. diam; CBKH type 9100-35 modified per CBTL part/dwg NL-900189-1 | p/o PA Dial Drive Assy |
| O-1336 | Low Failure Item | SPROCKET, CHAIN: brass, nickel pl; round, 10 teeth; 0.543 in. OD, 0.125 in. thk o/a dimen; shaft mtd by means of 0.125 in. diam hole through center; CBKH type 9100-10 modified per CBTL part/dwg NL-900198-1 | p/o IPA Tuning Drive Assy |
| O-1336.1 | | Same as O-1336 | p/o PA Dial Drive Assy |
| O-1336.2 | | Same as O-1336 | p/o IPA Tuning Drive |
| O-1337 | Low Failure Item | SPROCKET, CHAIN: idler; brass, nickel pl; round, 14 teeth; 0.735 in. OD by 0.312 in. wd o/a dimen; hub 3/8 in. OD, 3/16 in. wd; shaft mtd by means of 0.125 in. diam hole through center; CBKH type 9100-14 modified per CBTL part/dwg NL-901055-1 | Idler for PA Drive Assy |
| O-1338 | N16-R-99999-0865 | RING, RETAINING: steel, SAE 1060-1090, plain, iridite dip; external, for 1/4 in. diam shaft, ID 0.225 in., 0.025 in. thk; installed by means of special pliers no. 2; CCDE truearc part 5100-25-SMI | p/o IPA Dial Drive Assy |
| O-1338.1 | | Same as O-1338 | p/o Detent Assy for S-1301 |
| O-1338.2 | | Same as O-1338 | p/o Detent Assy for S-1301 |
| O-1339 | N16-R-99999-0859 | RING, RETAINING: beryllium copper, plain, iridite dip; external, for 3/16 in. diam shaft, ID 0.168 in., 0.015 in. thk; installed by means of special pliers no. 2; CCDE truearc part 5100-18-C-MI | p/o IPA Dial Drive Assy |
| O-1339.1 | | Same as O-1339 | p/o IPA Dial Drive Assy |
| O-1340 | N16-R-99999-0860 | RING, RETAINING: beryllium copper, plain, iridite dip; external, for 1/8 in. diam shaft, ID 0.112 in. 0.010 in. thk; installed by means of special pliers no. 2; CCDE truearc part 5100-12-C-MI | p/o PA Tune Drive Mechanism |
| O-1341 | | Same as O-1338 | p/o PA Dial Drive Assy |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--------------------------|
| O-1342 | | Same as O-1339 | p/o PA Dial Drive Assy |
| O-1342.1 | | Same as O-1339 | p/o PA Dial Drive Assy |
| O-1343 | Low Failure Item | RACK ASSEMBLY: capacitor tuning; rack steel, cad pl, straight teeth, 32 pitch, 1-11/16 in. lg, 3/16 in. sq o/a, 0.101 in. diam hole 1/8 in. from one end; steel screw cad pl, 1/4 in. -28 NF-2 thd, 1-3/4 in. lg o/a w/ 1/2 in. hex hd slotted 0.218 in. wd, 5/16 in. d, 0.094 in. diam hole through side of head; rack mtd in hex head of screw; o/a dimen 3-7/32 in. lg, 1/2 in. across flats; CBTL part/dwg NL-925578-1; u/w C-1319 | p/o PA Tuning Drive |
| O-1343.1 | | Same as O-1343; u/w C-1320 | p/o PA Tuning Drive |
| O-1343.2 | | Same as O-1343; u/w C-1321 | p/o PA Tuning Drive |
| O-1344 | N17-H-901148-150 | HUB-YOKE ASSEMBLY: oblong shape, c/o of hub and yoke similar to ones used on CJA coupling no. K39006; coupling bronze, nickel pl, hub brass, nickel pl; 1 in. lg, 1/2 in. wd, 7/32 in. thk o/a dimen; shaft hole 1/4 in. diam, two mtg holes no. 6-32 thd, spaced 90° apart, 1/4 in. lg, 1/8 in. wd cutout at each end of yoke; CBTL part/dwg NL-982890-1 | u/w IPA Tuning Capacitor |
| O-1344.1 | | Same as O-1344 | u/w IPA Tuning Capacitor |
| O-1345 | N17-C-99999-1188 | INSERT, FLEXIBLE COUPLING: melamine tubing; round w/ keys; 1 in. diam, 5/8 in. wd o/a dimen; mts by means of 5/8 in. diam center hole; four 3/16 in. lg, 1/8 in. wd keys, two located on each end spaced 180° apart; CBTL part/dwg NL-982884-1 | u/w IPA Tuning Capacitor |
| O-1346 | Low Failure Item | RACK ASSEMBLY: core tuning; CBH rack no. L503, steel, straight teeth, 32 pitch, 3-5/8 in. lg, 3/16 in. sq, straight face, one end 0.125 in. diam by 7/32 in. lg shoulder; steel screw 9/16 in. lg, w/3/8 in. hex head 5/16 in. lg and no. 8-32 thd; one 1/8 in. diam hole 1/4 in. d in center of hex head and one 3/32 in. diam hole thru one wall only on side of hex head; rack mtd in hex head of screw; o/a dimen 3-29/32 in. lg, 5/16 in. across hex flats; CBTL part/dwg NL-981086-1-2 | p/o PA Tuning Drive |
| O-1346.1 | | Same as O-1346 | p/o PA Tuning Drive |
| O-1347 | Low Failure Item | RACK ASSEMBLY: core tuning; CBH rack no. L503, steel, straight teeth, 32 pitch, 3-1/8 in. lg, 3/16 in. sq, straight face, one end 0.125 in. diam, 7/32 in. lg, shoulder; steel screw 9/16 in. lg w/3/8 in. hex head 5/16 in. lg and no. 8-32 thd; one 1/8 in. diam hole 1/4 in. d in center of hex head and one 3/32 in. diam hole thru one wall only on side of hex head; rack mtd in hex head of screw; o/a dimen 3-13/32 in. lg, 3/8 in. across hex flats; CBTL part/dwg NL-981086-1-1 | p/o PA Tuning Drive |
| O-1348 | Low Failure Item | WHEEL ASSEMBLY, IDLER: c/o 10-tooth sprocket, idler shaft, retaining ring "Truarc" 5100-12-C-MI, idler block; 1-1/8 in. lg, 0.656 in. wd, 13/16 in. h approx o/a; mtg slot 1 in. lg, 0.125 in. wd; CBTL part/dwg NL-900316-1 | p/o IPA Tuning Drive |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------------|---|---|--------------------------------------|
| O-1349 | Low Failure Item | SPRING, HELICAL, EXTENSION: cylindrical shape, Ref Dwg Group 66; 5-1/2 lbs load at 5/16 in. deflection and 9-1/8 lbs load at 1/2 in. deflection; 11 coils close wound, RH helix; both ends style no. 10, Ref Dwg Group 66, o/a dimen 0.047 in. diam size of wire, 0.564 free o/a lg of coils, 1-1/16 in. free lg inside of hooks, 3/8 in. OD of spring, 9/32 in. ID of spring, 3/16 in. wd of hook opening, 1-5/32 in. free o/a lg; hooks indexed at 90°; material corrosion resisting steel spring wire, type 302 per MIL-W-6713, Cond B; round, 0.047 in. diam; CBTL part/dwg NL-901499-1 | u/w Detent of S-1301 |
| O-1350 | Procured on demand by nearest Naval Shore Activity | RETAINER, bearing: upper; c/o rectangular, corrosion resisting steel, electropolish finish ball spacer w/twelve 0.125 in. diam stainless steel balls, self-retained; 11.344 in. lg, 1/4 in. wd, 0.125 in. thk o/a dimen; CCCS dwg no. A-9019.9-1 (Revision no. 3); p/o H-1314; same as O-506 | p/o Chassis Slide |
| O-1350.1 | | Same as O-1350; p/o H-1315 | p/o Chassis Slide |
| O-1351 | Procure on demand by nearest Naval Shore Activity | RETAINER, bearing: lower; c/o rectangular, corrosion resisting steel, electropolish finish ball spacer w/twelve 0.125 in. diam stainless steel balls, self-retained; 10.844 in. lg, 1/4 in. wd, 0.125 in. thk o/a dimen; CCCS dwg no. A-9019.9-2 (Revision no. 3); p/o H-1314; same as O-508 | p/o Chassis Slide |
| O-1351.1 | | Same as O-1351; p/o H-1315 | p/o Chassis Slide |
| O-1352 | Low Failure Item | SPRING: helical compression type; 0.032 in. diam music wire per NAVY spec 22W11C; 3/8 in. h, 1/2 in. diam o/a; 3-1/2 turns, RH or LH wound; first and last 3/4 turns are flat; cad pl; CBTL part/dwg NL-900018-1; u/w H-1314; same as O-507 | Stop Button Spring For Chassis Slide |
| O-1352.1 | | Same as O-1352; u/w H-1315 | Stop Button Spring For Chassis Slide |
| O-1353 | Low Failure Item | PIN, clevis: stainless steel; no dimension of this item is greater than one inch; disconnect pin of CBKH series 75-SS mechanical chain | Used to Join Ends of Chain Assy |
| O-1353.1 thru O-1353.4 | | Same as O-1353 | Used to Join Ends of Chain Assy |
| O-1354 | Low Failure Item | RING, bearing: stainless steel; no dimension of this item is greater than one inch; tubular pin of CBKH series 75-SS mechanical chain | u/w Chain Assy |
| O-1354.1 thru O-1354.4 | | Same as O-1354 | u/w Chain Assy |
| O-1355 | Low Failure Item | RING, RETAINING: stainless steel; no dimension of this item is greater than one inch; keeper of CBKH series 75-SS mechanical chain | u/w Chain Assy |
| O-1355.1 thru O-1355.4 | | Same as O-1355 | u/w Chain Assy |
| O-1356 | N16-G-402366-896 | GEAR, BEVEL: brass, chrome pl; straight teeth; 24 teeth; 24 pitch; 1 in. pitch diam; 1.06 in. OD, 17/32 in. d, 1/4 in. ID; face at 45° angle; hub extends 1/4 in. beyond face of gear, 5/8 | p/o PA Tuning Drive |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|-------------------------------|
| O-1356 (cont) | | in. OD; two no. 8-32 thd holes thru one wall 5/32 in. from end of hub 90° apart; CBH part G464 modified; CBTL part/dwg NL-982290-1 | |
| O-1357 | Low Failure Item | SPRING: loop type; for latch; 0.038 in. diam corrosion resisting steel spring wire; 2-1/2 in. lg, 11/16 in. h o/a; one end semi-hook type, one end open; irregular shape; CBTL part/dwg NL-900991-1; p/o H-1314; same as O-509 | For Latch in Chassis Slide |
| O-1357.1 | | Same as O-1357; p/o H-1315 | For Latch in Chassis Slide |
| O-1358 | Low Failure Item | SPRING: flat type; beryllium copper alloy No. 25 Cond 1/4 H, 0.025 in. thk strip per MIL-C-947, silver pl; one no. 3-48 thd mtg hole on term; 1-3/8 in. lg, 15/16 in. h; CBTL part/dwg NL-900142-1; p/o S-1306; same as O-510 | For Contact in S-1306 |
| O-1359 | Low Failure Item | SPRING, HELICAL, COMPRESSION: cylindrical shape per Ref Dwg Group 65; five coils, RH helix; end style no. 1 per Ref Dwg Group 65; steel spring wire, corrosion-resisting, Type 302, per spec MIL-W-6713 Cond B, round, 0.043 in. diam; passivate finish; 1/2 in. free o/a lg of spring, 0.25 in. OD, 0.164 in. ID; CBTL part/dwg NL-900573-1; p/o S-1383 | p/o Selector Mechanism |
| O-1360 | N16-A-700001-0581 | ACTUATOR ARM: furnishes tension on spring for counterbalance in PA tuning; assembly consists of two CGM type R6X1A bearings press fitted and staked into actuator arm which has Torrington Type B-47 needle bearing peened to it; brass casting; nickel pl; 2-1/4 in. h, 1-11/16 in. wd, 1-1/2 in. thk o/a dimen; 0.3750 in. bore; CBTL part/dwg NL-900293-1 | Counterbalance Arm |
| P-1301 thru P-1307 | | Not Used | |
| P-1308 | N17-C-71408-5333 | CONNECTOR, PLUG, ELECTRICAL: 1 contact, male, round; straight type; BNC connector; 31/32 in. lg, 9/16 in. diam o/a; RF connector, 50 ohms nominal impedance; constant frequency impedance; cylindrical shape, brass, silver pl; locking type; teflon insert; 0.206 in. diam max cable opening; NAVY dwg RE49F246; MIL type UG-88/U; same as P-601 | RF Input Plug to V-1301 |
| R-1301 | N16-R-50533-431 | RESISTOR, FIXED, COMPOSITION: 62,000 ohms, ±5%; 1/2 w; per spec JAN-R-11; JAN type RC20BF623J | Bias Divider |
| R-1302 | N16-R-65532-8893 | RESISTOR, FIXED, WIRE WOUND: 50 ohms, ±5%; 22 w; per spec MIL-R-26; MIL type RW21G500 | Terminating Resistor HV Lead |
| R-1303 | | Not Used | |
| R-1304 | N16-R-49579-431 | RESISTOR, FIXED, COMPOSITION: 100 ohms, ±5%; 1/2 w; per spec JAN-R-11; JAN type RC20BF101J | Cathode Bias V-1301 |
| R-1305 | N16-R-50677-751 | RESISTOR, FIXED, COMPOSITION: 0.15 megohms, ±5%; 1 w; per spec JAN-R-11; JAN type RC30BF154J | Screen Voltage Divider V-1301 |
| R-1306 | N16-R-50128-751 | RESISTOR, FIXED, COMPOSITION: 4,700 ohms, ±5%; 1 w; per spec JAN-R-11; JAN type RC30BF472J | Buffer Damping Band 1 |
| R-1307 | | Not Used | |
| R-1308 | N16-R-50335-751 | RESISTOR, FIXED, COMPOSITION: 15,000 ohms, ±5%; 1 w; per spec JAN-R-11; JAN type RC30BF153J | Buffer Damping Band 5 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|------------------------------------|
| R-1309 | | Same as R-1308 | Buffer Damping Band 4 |
| R-1310 | | Same as R-1306 | Buffer Damping Band 3 |
| R-1311 | N16-R-50065-751 | RESISTOR, FIXED, COMPOSITION: 3300 ohms, $\pm 5\%$; 1 w; per spec JAN-R-11; JAN type RC30BF332J | Grid Leak V-1302 |
| R-1312 | N16-R-49239-231 | RESISTOR, FIXED, COMPOSITION: 10 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30BF100K | Parasitic Suppressor V-1302 |
| R-1313 | N16-R-50012-126 | RESISTOR, FIXED, COMPOSITION: 2200 ohms, $\pm 5\%$; 2 w; per spec JAN-R-11; JAN type RC42BF222J | Screen Filter V-1302 |
| R-1314 | N16-R-79788-9599 | RESISTOR, FIXED, WIRE WOUND: 0.5 ohms, $\pm 1\%$; 1/4 w; per spec JAN-R-93; JAN type RB51BR5000F | Meter Mult. Cathode Cur. V-1302 |
| R-1315 | N16-R-80035-9599 | RESISTOR, FIXED, WIRE WOUND: 500 ohms, $\pm 1\%$; 1/4 w; per spec JAN-R-93; JAN type RB51B50R00F | Meter Mult. Grid Cur. V-1302 |
| R-1316 | N16-R-50517-231 | RESISTOR, FIXED, COMPOSITION: 56,000 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30BF563K; same as R-1114 | Meter Mult. Plate Volt. V-1302 |
| R-1317 | N16-R-73546-9751 | RESISTOR, FIXED, FILM: body style no. 25, Ref Dwg Group 2; 10 megohms, $\pm 1\%$; 1 w; "Nobeloy" metal conductive film; temp. coefficient from -0.050% to -0.080% per $^{\circ}\text{C}$; o/a dimen 1 in. lg, 0.370 in. OD at ends, 0.140 in. ID; rubberized enamel coating, resistant to humidity; 2 wire pigtail leads, 1-1/2 in. lg; CCC type X-1 | Meter Mult. Plate Volt. V-1302 |
| R-1318 | N16-R-73541-3111 | RESISTOR, FIXED, FILM: body style no. 25, Ref Dwg Group 2; 5 megohms, $\pm 1\%$; 1 w; "Nobeloy" metal conductive film; temp coefficient from -0.050% to -0.080% per $^{\circ}\text{C}$; o/a dimen 1 in. lg, 0.370 in. OD at ends, 0.140 in. ID; rubberized enamel coating, resistant to humidity; 2 wire pigtail leads, 1-1/2 in. lg; CCC type X-1 | Meter Mult. Screen Volt. V-1302 |
| R-1319 | N16-R-80005-6599 | RESISTOR, FIXED, WIRE WOUND: 25 ohms, $\pm 1\%$; 1/4 w; per spec JAN-R-93; JAN type RB51B25R00F | Meter Mult. Screen Cur. V-1302 |
| R-1320 | | Not Used | |
| R-1321 | | Not Used | |
| R-1322 | N16-R-68441-2076 | RESISTOR, FIXED, WIRE WOUND: body style no. 3, MBCA Ref Dwg Group 2; non-inductive winding; 10,000 ohms, $\pm 5\%$; 10 w, 240 $^{\circ}\text{C}$ max continuous operating temp; 1-27/32 in. lg by 15/32 in. diam o/a dimen excluding term; ceramic tube type protective covering, resistant to humidity; 2 wire lead type term, axial, 0.032 in. diam by 2-1/2 in. lg; type "C" clamp mtd, extends 11/16 in. beyond body of resistor, 5/16 in. wd, with 5/32 in. diam hole for mtg screw; CSF 10 NIT, w/clamp, type C | IPA Band 2 Damping |
| R-1323 | | Same as R-1322 | IPA Band 4 Damping |
| R-1324 | N16-R-68433-7171 | RESISTOR, FIXED, WIRE WOUND: body style no. 3, MBCA Ref Dwg Group 2; non-inductive winding; 7500 ohms, $\pm 5\%$; 10 w, 240 $^{\circ}\text{C}$ max continuous operating temp; 1-27/32 in. lg by 15/32 in. diam o/a dimen excluding term; ceramic tube type protect- | IPA Band 3 Damping |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---------------------------------|
| R-1324 (cont) | | ive covering, resistant to humidity; 2 wire lead type term, axial, 0.032 in. diam by 2-1/2 in. lg; type "C" clamp mtd, extends 11/16 in. beyond body of resistor, 5/16 in. wd, with 5/32 in. diam hole for mtg screw; CSF 10 NIT, w/clamp, type C | |
| R-1325 | | Not Used | |
| R-1326 | N16-R-79892-5478 | RESISTOR, FIXED, WIRE WOUND: 5.0 ohms, $\pm 1\%$; 1/4 w; per spec JAN-R-93; JAN type RB51B5R000F | Meter Mult. Grid Cur. V-1304 |
| R-1327 | N16-R-79752-2179 | RESISTOR, FIXED, WIRE WOUND: 0.25 ohms, $\pm 1\%$; 1/4 w; per spec JAN-R-93; JAN type RB51BR2500F | Meter Mult. Cathode Cur. V-1304 |
| R-1328 | | Same as R-1316 | Meter Mult. Screen Volt. V-1304 |
| R-1329 | | Same as R-1317 | Meter Mult. Screen Volt. V-1304 |
| R-1330 | N16-R-79862-6679 | RESISTOR, FIXED, WIRE WOUND: 2.5 ohms, $\pm 1\%$; 1/4 w; per spec JAN-R-93; JAN type RB51B2R500F | Meter Mult. Screen Cur. V-1304 |
| R-1331 | | Not Used | |
| R-1332 | | Same as R-1317 | Meter Mult. Plate Volt. V-1304 |
| R-1333 | | Same as R-1317 | Meter Mult. Plate Volt. V-1304 |
| R-1334 | | Same as R-1317 | Meter Mult. Plate Volt. V-1304 |
| R-1335 | | Same as R-1317 | Meter Mult. Plate Volt. V-1304 |
| R-1336 | | Same as R-1317 | Meter Mult. Plate Volt. V-1304 |
| R-1337 | | Same as R-1316 | Meter Mult. Plate Volt. V-1304 |
| R-1338 | N16-R-73509-4299 | RESISTOR, FIXED, FILM: body style no. 25, Ref Dwg Group 2; 49,000 ohms, $\pm 1\%$; 1 w; "Nobeloy" metal conductive film; temp coefficient from -0.025% to -0.040% per $^{\circ}\text{C}$; o/a dimen 1 in. lg, 0.370 in. OD at ends, 0.140 in. ID; rubberized enamel coating, resistant to humidity; 2 wire pigtail leads, 1-1/2 in. lg; CCC type X-1 | Crystal Load CR-1301 |
| R-1339 | | Same as R-1316 | Meter Mult. Plate Volt. V-1302 |
| R-1340 | | Not Used | |
| R-1341 | N16-R-50372-126 | RESISTOR, FIXED, COMPOSITION: 22,000 ohms, $\pm 5\%$; 2 w; per spec JAN-R-11; JAN type RC42BF223J | Bias Divider V-1302 |
| R-1342 | N16-R-50282-129 | RESISTOR, FIXED, COMPOSITION: 10,000 ohms, $\pm 5\%$; 2 w; per spec JAN-R-11; JAN type RC42BF103J | Bias Divider V-1302 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|---|
| R-1343 | | Not Used | |
| R-1344 | For Replacement Use N16-R-68416-4406 | RESISTOR, FIXED, WIRE WOUND: 3500 ohms, $\pm 5\%$; 5 w; per spec JAN-R-26; JAN type RW55G352 | Grid Divider Return V-1304 |
| R-1345 | N16-R-87349-4560 | RESISTOR, VARIABLE: composition element; 1 section; 1000 ohms, $\pm 10\%$; 2.25 w nominal power rating at 100% CW rotation, 2 w at 50% CW rotation; special taper, CBZ "U" taper, 150, 380, 630, 870 ohms resistance at 20, 40, 60, 80% rotations respectively; 3 solder lug type term; metal case, enclosed, 1-1/16 in. diam 9/16 in. d; round, screwdriver-slotted, metal shaft, corrosion resistant, 1/4 in. diam 5/8 in. lg, normal torque, w/ shaft locking device; contact arm insulated, no "off" position; mtd by bushing 3/8 in. -32 NEF-2 thd 1/2 in. lg; CBZ type JLU1021-SD4040L type J | Bias Adjust V-1304 |
| R-1346 | | Not Used | |
| R-1347 | | Not Used | |
| R-1348 | | Same as R-1345 | Bias Adjust V-1304 |
| R-1349 thru R-1369 | | Not Used | |
| R-1370 | For Replacement Use N16-R-49841-124 | RESISTOR, FIXED, COMPOSITION: 660 ohms, $\pm 5\%$; 2 w; per spec JAN-R-11; JAN type RC42BF681J | Overload Relay Shunt K-1303 |
| R-1371 | | Same as R-1316 | Meter Mult. Bias Volt. V-1302 |
| R-1372 | | Same as R-1318 | Meter Mult. Bias Volt. V-1302 |
| R-1373 | N16-R-49805-811 | RESISTOR, FIXED, COMPOSITION: 560 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF561K | Screen Voltage Divider V-1301 |
| R-1374 | For Replacement Use N16-R-66303-4543 | RESISTOR, FIXED, WIRE WOUND: 6,300 ohms, $\pm 5\%$; per spec MIL-R-26A; MIL type RW20G632; same as R-1067 | Screen Voltage Divider V-1301 |
| R-1375 | For Replacement Use N16-R-66085-6406 | RESISTOR, FIXED, WIRE WOUND: 1,600 ohms, $\pm 5\%$; 15 w; per spec MIL-R-26; MIL type RW20G162 | Bias Divider V-1304 |
| R-1376 | For Replacement Use N16-R-66140-9266 | RESISTOR, FIXED, WIRE WOUND: 2,500 ohms, $\pm 5\%$; 15 w; per spec MIL-R-26; MIL type RW20G252 | Bias Divider V-1304 |
| R-1377 | For Replacement Use N16-R-66397-8241 | RESISTOR, FIXED, WIRE WOUND: 10,000 ohms, $\pm 5\%$; 22 w; per spec MIL-R-26; MIL type RW21G103 | Screen Volt. Dropping Resistor V-1304 |
| R-1378 thru R-1388 | | Not Used | |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|---|
| R-1389 | For Replacement Use N16-R-49859-141 | RESISTOR, FIXED, COMPOSITION: 750 ohms, $\pm 5\%$; 2 w; per spec JAN-R-11; JAN type RC42BF751J | 100 w Operation Shunt K-1303 |
| R-1390 | | Not Used | |
| R-1391 | | Not Used | |
| R-1392 | | Same as R-1306 | Buffer Damping Band 2 |
| R-1393 | | Same as R-1322 | IPA Band 1 Damping |
| R-1394 | N16-R-49581-461 | RESISTOR, FIXED, COMPOSITION: 100 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42BF101K | Screen Volt. RF Filter V-1304 |
| R-1395 | N16-R-50587-939 | RESISTOR, FIXED, COMPOSITION: 82,000 ohms, $\pm 5\%$; 2 w; per spec JAN-R-11; JAN type RC42BF823J | Cutoff Bias Limiter |
| R-1396 | | Same as R-1312 | Cathode Filter |
| R-1397 | For Replacement Use N16-R-87023-8958 | RESISTOR, VARIABLE: composition element; 1 section; 1000 ohms, $\pm 10\%$; 2.25 w nominal power rating at 100% CW rotation, 2 w at 50% CW rotation; special taper, CBZ "U" taper, 15, 38, 63, 87 ohms resistance at 20, 40, 60, 80% rotations respect- ively; 3 solder lug type term; metal case, enclosed, 1-1/16 in. diam, 9/16 in. d; round, corrosion resistant metal shaft, 1/4 in. diam, 5/8 in. lg, normal torque; contact arm insulated, no "off" positions; mtd by bushing 3/8 in. -32 NEF-2 thd, 3/8 in. lg; CBZ type JU1011-P-3040 type J | Excitation Control |
| S-1301 | N17-S-66529-3902 | SWITCH, ROTARY: 4 sections; 2 sections are 2 pole, 6 posi- tions, 2 sections are 1 pole, 6 positions; non-shorting type silver alloy contacts; 500v DC max, 1 amp nominal load; ceramic insulation; 9-3/4 in. lg excluding shaft, 2-9/16 in. wd, 3-3/8 in. h o/a dimen; flatted shaft extends 1-1/16 in. beyond body of switch; solder lug type term; 2 studs 2-7/8 in. apart on each end, no. 10-32 thd nuts; CPD type 93; CBTL part/dwg NL-980793-14 (2 and 2 sections); incl switch wafer sections S-1301A, B, C, D | Buffer IPA Bandswitch |
| S-1301A | N17-S-91772-4016 | SWITCH, SECTION, ROTARY: 2 pole, 6 position spaced 60°; ceramic body; silver alloy contact; 500v DC max, 1 amp nominal load; 3-3/8 in. lg, 2-5/8 in. wd, 1 in. thk; mtd by 2 holes for no. 8-32 thd screw 2-7/8 in. apart; rotor c/o two poles; one selects a single contact and the other pole shorts the rest; CBTL part/dwg NL-980793-14 Fig 1; p/o S-1301 | Coil Selector V-1301 |
| S-1301B | | Same as S-1301A; p/o S-1301 | Coil Selector V-1302 |
| S-1301C | N17-S-91772-4017 | SWITCH SECTION, ROTARY: 1 pole, 6 positions spaced 60°; ceramic body; silver-alloy non-shorting contact; 500v DC max, 1 amp nominal load; 3-3/8 in. lg, 2-5/8 in. wd, 1 in. thk; mtd by 2 holes for no. 8-32 thd screw 2-7/8 in. apart; rotor c/o one pole which selects a single contact; CBTL part/dwg NL-980793- 14 Fig 2; p/o S-1301 | Bandsread Capacitor Switch V-1301 |
| S-1301D | | Same as S-1301C; p/o S-1301 | Bandsread Capacitor Switch V-1302 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|---------------------------------|
| S-1302 | N17-S-67000-9815 | SWITCH, ROTARY: 7 sections; 1 pole 6 positions; solid silver alloy contact; non-shorting type contact; ceramic body; 13-1/16 in. lg, 3-7/8 in. wd, 5-1/8 in. h o/a dimen; solder lug type term; mtg by three no. 8-32 thd studs each end 120° apart on 1-11/16 in. rad; oilite bushing at center for 1/4 in. diam shaft; CPD type 94; CBTL part/dwg NL-980625-14; incl switch wafer sections S-1302A; B, C, D, E, F and G | Power Amplifier Bandswitch |
| S-1302A | For Reference Only | SWITCH SECTION, ROTARY: 1 pole, 6 positions spaced 60°; ceramic body; solid silver alloy non-shorting type contact; 10,000v peak, 3 amp; 3-7/8 in. diam, 1 in. wd. o/a dimen; solder lug type term; mtd by 3 holes for no. 8-32 screws spaced 120° apart on 1-11/16 in. rad; rotor c/o 1 pole which selects single contact; CBTL part/dwg NL-980625-14 Section A; p/o S-1302 | RF Choke Shorting Switch V-1304 |
| S-1302B | For Reference Only | SWITCH SECTION, ROTARY: 1 pole, 6 position spaced 60°; ceramic body; solid silver alloy non-shorting contact; 5,000v peak, 20 amp; 3-7/8 in. diam, 1-1/2 in. wd o/a dimen; solder lug type term; mtd by 3 holes for no. 8-32 screw 120° apart on 1-11/16 in. rad; rotor c/o 1 pole which selects a single contact/w/special contact arm; CBTL part/dwg NL-980625-14 Section B; p/o S-1302 | Filter Coil Selector V-1304 |
| S-1302C | For Reference Only | SWITCH SECTION, ROTARY: 1 pole, 6 position spaced 60°; ceramic body; solid silver alloy non-shorting contact; 5,000v peak, 5 amp; 3-7/8 in. diam, 1-1/2 in. wd o/a dimen; solder lug type term; mtd by 3 holes for no. 8-32 screw 120° apart on 1-11/16 in. rad; rotor c/o 1 pole which shorts all but one contact; CBTL part/dwg NL-980625-14 Section C; p/o S-1302 | Filter Coil Selector V-1304 |
| S-1302D | For Reference Only | SWITCH SECTION, ROTARY: 1 pole, 6 position spaced 60°; ceramic body; solid silver alloy non-shorting contact; 5,000v peak, 5 amp; 3-7/8 in. diam, 1-1/2 in. wd o/a; solder lug type term; mtd by 3 holes for no. 8-32 screw 120° apart on 1-11/16 in. radius; rotor c/o 1 pole which shorts all but 1 contact; rotor keyway reversed 180° from position of S-1302C; CBTL part/dwg NL-980625-14 Section D; p/o S-1302 | Antenna Coil Shorting V-1304 |
| S-1302E | For Reference Only | SWITCH SECTION, ROTARY: 1 pole, 6 positions spaced 60°; ceramic body; solid silver alloy non-shorting dual contact; 5,000v peak; 40 amp; 3-7/8 in. diam, 1-1/2 in. wd o/a dimen; solder lug type term; mtd by 3 holes for no. 8-32 screw 120° apart on 1-11/16 in. rad; rotor c/o 1 pole which selects a single dual contact w/special dual contact arm; CBTL part/dwg NL-980625-14 Section E; p/o S-1302 | Antenna Coil Selector V-1304 |
| S-1302F | For Reference Only | SWITCH SECTION, ROTARY: 1 pole, 6 positions spaced 60°; ceramic body; solid silver alloy non-shorting type contact; 500v peak, 5 amp; 3-7/8 in. diam, 1 in. wd o/a dimen; solder lug type term; mtd by 3 holes for no. 8-32 thd screws spaced 120° apart on 1-11/16 in. rad; rotor c/o 1 pole which selects single contact; angular positioning of rotor contact arm per NL-980625-14; CBTL part/dwg NL-980625-14 Section F; p/o S-1302 | Antenna Tap Selector V-1304 |
| S-1302G | For Reference Only | SWITCH SECTION, ROTARY: 1 pole, 6 positions spaced 60°; ceramic body; solid silver alloy non-shorting contact; 500v peak, 5 amp; 3-7/8 in. diam, 1 in. wd o/a; solder lug type term; mtd by 3 holes for no. 8-32 thd screws spaced 120° apart on 1-11/16 in. rad; angular positioning of rotor contact arm per NL-980625-14; CBTL part/dwg NL-980625-14 Section G; p/o S-1302 | Harmonic Trap Selector V-1304 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|--|
| S-1303 | | Not Used | |
| S-1304 | N17-S-56407-2863 | SWITCH, PUSH: SPST; AC, 2 amps; 24v; momentary, normally open; nickel pl metal; 1-29/64 in. lg, 5/8 in. diam; push-button type; 2 screw type term located on bottom; single mtg bushing no. 15-32 in. thd; CAE type CH8450K1 | Overload Reset |
| S-1305 | N17-S-72018-7719 | SWITCH, TOGGLE: SPDT; 1 amp/250v, 3 amp/125v; phenolic body; 2-1/8 in. lg, 1-9/32 in. h, 23/32 in. wd o/a dimen; bat type actuating handle, excluding 15/32 in. bushing; locking action; 6 solder lug type term located on back; single hole mtg for 15/32 in. -32 thd bushing; per spec JAN-S-23; JAN type ST12D; same as S-1103 | External-Internal Oscillator Switch |
| S-1306 | N17-S-99999-0626 | SWITCH, INTERLOCK: push with snap action cheater; 2 piece door type; DPST, male and female type, beryllium copper alloy strip contact; thermosetting plastic molding body; 1-1/2 in. lg by 1-1/2 in. wd by 1/2 in. thk o/a dimen excluding term posts and push rod; 2 screw type term located on both ends of switch; mtd by means of two 0.128 in. diam countersunk holes spaced 0.875 in. apart; interrupts 24v DC; CBTL part/dwg NL-900059-2; same as S-501 | Interlock Switch |
| S-1307 thru S-1377 | | Not Used | |
| S-1378 | N17-S-99999-0604 | SWITCH, ROTARY: 1 section, 1 pole, 6 positions spaced 60°; ceramic body; solid silver alloy contacts; non-shorting rotor; c/o wafer only w/o shaft or mtg plate; 1-7/8 in. lg, 1-7/8 in. wd, 3/16 in. thk excluding solder lug term; COC type HC; CBTL part/dwg NL-900097-2 | Bandswitch 500 w Disable Circuit |
| S-1379 | | Not Used | |
| S-1380 | | Not Used | |
| S-1381 | N17-S-99999-0595 | SWITCH, THERMOSTATIC: SPDT; adjustable operating temp range from 1706 °F to 2010 °F, temp set at 1922 °F; temp element bimetal type; hex nut type range adjuster; 250v AC, 5 amp; energy required to operate actuating mechanism/expansion strip, 1.5 to 4 w/sq in.; 3 solder lug term; plastic body; 3-7/8 in. lg, 1-1/16 in. wd, 5/8 in. h o/a dimen; mtd by two no. 6-32 NC-2 thd holes on 3-9/16 in. mtg/c; CBTL part/dwg NL-925467-2 | Excessive Plate Dissipation Alarm V-1304 |
| S-1382 | | Not Used | |
| S-1383 | N17-S-69144-9624 | SWITCH, SENSITIVE: SPDT, 125v AC; 10 amp; phenolic body; 1-5/8 in. lg, 53/64 in. wd, 9/32 in. h o/a; plunger snap action type 0.010 in. max differential movement, 1/32 in. max pre-travel; 10 to 16 oz operating force; 4 oz min release; momentary action; 3 solder lug type term; four 3/32 in. diam holes spaced on corners w/1 in. centers on lg and 5/8 in. centers on wd; w/actuating plunger for cam operation; CATK type no. 3MD2-1A | Bandswitch Push to Turn Disable Circuit |
| S-1384 | N17-S-99999-0603 | SWITCH, ROTARY: 1 section, 2 pole, 6 position spaced 30°; 1500v breakdown between contacts; ceramic insulation; non-shorting silver contacts; not inclosed; 1-25/32 in. lg by 1-1/2 in. diam o/a; bushing mtd, 3/8 in. -32 thd by 3/8 in. lg; round, flatted shaft, 1/4 in. diam, 1/2 in. lg from mtg surface; solder | Voltmeter Switch for M-1301 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---------------------------------|
| S-1384 (cont) | | lug type term; provided w/adjustable stops at each end of travel; CCCT type 4M-LW; CBTL part/dwg NL-900214-2 | |
| S-1385 | N17-S-56738-9803 | SWITCH, PUSH: 10 amp, 115v AC; 1-7/8 in. lg, 7/8 in. diam o/a dimen; SPST; momentary contact; normally closed; 2 solder lug type term; single mtg bushing 15/32 in. -32 thd; pushbutton type; CBDW type no. 2202 | Disable 500 w to RFO |
| S-1386 | N17-S-99999-0602 | SWITCH, ROTARY: 1 section, 2 pole, 3 position spaced 30°; 1500v breakdown between contacts; ceramic insulation; non-shortening silver contacts; not inclosed; 1-25/32 in. lg by 1-1/2 in. diam o/a; bushing mtd, 3/8 in. -32 thd by 3/8 in. lg; round, flatted shaft, 1/4 in. diam, 1/2 in. lg from mtg surface; solder lug type term; provided w/adjustable stops at each end of travel; CCCT type 4M-LW; CBTL part/dwg NL-900215-2 | IPA Meter Switch M-1304 |
| S-1387 | | Same as S-1386 | PA Meter Switch M-1303 |
| S-1388 | | Same as S-1304 | Push for 500 w Operation |
| T-1301 | | Not Used | |
| T-1302 | N17-T-70228-8632 | TRANSFORMER, POWER, STEP-DOWN: hermetically sealed metal case; 110v AC, 50/60 cyc, single ph input; 2 output windings, no. 1 secondary 6.3v at 6.5 amps, no. 2 secondary 5.0v at 14.5 amps center tapped; Robertson potting compound; o/a dimen 3-3/4 in. sq max by 4-17/32 in. max h MBCA Ref Dwg Group 12; 7 standoff type term, 9/16 in. diam by 25/32 in. lg located on bottom; four no. 10-32 thd by 1/2 in. lg mtg studs on 2-7/8 in. by 2-7/8 in. mtg/c; electrostatic shield; per spec ML-T-27; CUT part no. F-3612; CBTL part/dwg NL-980605-1 | Filament Trans-former |
| V-1301 | N16-T-56177 | ELECTRON TUBE: pentode; per spec JAN-1A; JAN type 6AG7 | Buffer Amplifier |
| V-1302 | N16-T-75933 | ELECTRON TUBE: tetrode; per spec JAN-1A; JAN type 5933; same as V-1006 | IPA |
| V-1303 | N16-T-52001 | ELECTRON TUBE: voltage regulator; per spec JAN-1A; JAN type OA2 | Voltage Regulator Screen V-1301 |
| V-1304 | N16-T-54067 | ELECTRON TUBE: tetrode; glass envelope, cylindrical shape; 3.56 in. diam; 5 terminations, pin type, located on bottom; radial-beam power tetrode; CIM type 4-400A | Power Amplifier |
| XF-1301 | Low Failure Item | FUSEHOLDER: extractor post type; 250v; 30 amp; accommodates 1 fuse, cartridge type, 1-1/2 in. lg, 13/32 in. diam; black bakelite body; bright alloy pl brass contacts; 2-1/4 in. lg, 1.775 in. wd, 1.2 in. h o/a dimen; 2 solder lug type term, hot tin dipped; two 0.167 in. mtg holes 1.312 in. c to c for fastening to panel; one mtg hole 0.865 in. diam; waterproof; CFA type HPC-DZ; CBTL part/dwg NL-900068-2; same as XF-501 | Holder for F-1301 |
| XI-1301 | N17-L-50812-3395 | LAMPHOLDER: single holder; accommodates special 952, MBCA Ref Dwg Grp 7; 28v, 0.035 amp; brass shell; 0.865 in. lg, 1/2 in. across flats of hexagonal top, 19/32 in. wd approx; 1 solder lug type term; mtd by 7/16 in. -28 NEF thd; body cad pl; CBTL part/dwg NL-981474-2; same as XI-401 | Retainer for I-1301 |
| XI-1302 | | Same as XI-1301 | Retainer for I-1302 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---------------------|
| XI-1303 | | Same as XI-1301 | Retainer for I-1303 |
| XI-1304 | | Same as XI-1301 | Retainer for I-1304 |
| XI-1305 | | Same as XI-1301 | Retainer for I-1305 |
| XI-1306 | | Same as XI-1301 | Retainer for I-1306 |
| XI-1307 | | Same as XI-1301 | Retainer for I-1307 |
| XI-1308 | | Same as XI-1301 | Retainer for I-1308 |
| XV-1301 | N16-S-63509-2037 | SOCKET, ELECTRON TUBE: 8 contacts, phosphor bronze, silver pl; medium; oval; 1-9/16 in. lg, 1-7/32 in. diam, 1/2 in. h o/a dimen excluding term; mica phenolic body; one piece saddle mtg; 0.084 in. diam chassis hole required, 2 mtg holes 0.136 in. diam, spaced 1-5/16 in. c to c; low loss mica phenolic; contact tails hot tin dipped; CMG dwg 9905, type 51A-13203 | Socket for V-1301 |
| XV-1302 | N16-S-61719-4639 | SOCKET, ELECTRON TUBE: 5 contacts, phosphor bronze, silver pl; medium; round; 2-5/32 in. lg, 1-3/8 in. wd, 41/64 in. h o/a dimen excluding term; ceramic steatite body; bracket and retainer ring mtg; 1.172 in. diam chassis hole required, 2 mtg slots 5/32 in. by 5/16 in. spaced 1-49/64 in. c to c; insulating barriers between all contacts; CJA type 33005; same as XV-1006 | Socket for V-1302 |
| XV-1303 | N16-S-62603-6702 | SOCKET, ELECTRON TUBE: 7 contacts, brass, nickel pl; miniature; incl metal shield base, 0.800 in. diam, 0.611 in. h; incl center shield, 0.125 in. ID; oval; 1-1/8 in. lg, 0.800 in. wd, 25/32 in. h o/a dimen excluding term; molded thermosetting plastic body; one piece saddle mtg, 5/8 in. diam chassis hole required, 2 mtg holes 0.125 in. diam, 0.875 in. c to c; per spec JAN-S-28A; JAN type TS102PO1 | Socket for V-1303 |
| XV-1304 | N16-S-61879-8201 | SOCKET, ELECTRON TUBE: five beryllium copper silver pl contacts; giant size; incl metal air system socket; oval shape; 5-3/8 in. lg, 4-1/8 in. wd, 1-1/16 in. o/a dimen excluding term; aluminum body; machine screw mtg, 3 in. diam chassis hole required; four no. 10-32 tapped mtg holes spaced 90° on 3-5/16 in. diam circle; has opening in casting for air intake duct, to be u/w glass air flow chimney; CIM 4-400A/4000 air-system socket modified; CBTL part/dwg NL-901416-2; incl XV-1304A | Socket for V-1304 |
| XV-1304A | For Reference Only | SOCKET, ELECTRON TUBE: five beryllium copper silver pl contacts; giant size; round; 3 in. diam; ceramic body; mtd by means of four no. 10-32 screws and spring clips; socket may be turned to orient tube; five screw type term; CIM part no. 9391-S; CBTL part/dwg NL-982220-2 Item 2; p/o XV-1304 | Insert for XV-1304 |
| Z-1301 | N17-S-50973-6401 | SUPPRESSOR, ELECTRICAL NOISE: two inductances, 4.9 uh each; four capacitors 70,000 mmf each; rated 120v RMS, 2 amp, 60 cyc; 50 ohms output impedance; 3-1/16 in. lg, 1-1/2 in. wd, 1 in. h o/a dimen; screw mtd w/two 0.187 in. mtg holes | Line Filter 110v AC |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|-------------------------------------|
| Z-1301 (cont) | | 2-3/8 in. c to c; 4 stud type term; hermetically sealed; CCCR type FA682A, code no. 81831; CBTL part/dwg NL-925288-1 | |
| 1401-1499 | F16-C-10642-8234 | CABINET, ELECTRICAL EQUIPMENT, CY-1573/SRT: material of frame-steel, sides-aluminum, backplate-hot rolled steel pickled and oiled; grey enamel finish; o/a dimen 24 in. lg, 16 in. wd, 9-5/8 in. h; wired; used to house POWER SUPPLY PP-1096/SRT which mts on roller rails inside cabinet drawer; same as CABINET, ELECTRICAL EQUIPMENT, CY-1573A/SRT except for material of backplate; p/o AN/SRT-15, 16; CBTL part/dwg NL-900934-14-1 | |
| 1401-1499 | F16-C-10642-8233 | CABINET, ELECTRICAL EQUIPMENT, CY-1573A/SRT: material of frame-steel, sides-aluminum, backplate-corrosion resisting steel; grey enamel finish; o/a dimen 24 in. lg, 16 in. wd, 9-5/8 in. h; wired; used to house POWER SUPPLY PP-1096/SRT which mts on roller rails inside cabinet drawer; same as CABINET, ELECTRICAL EQUIPMENT CY-1573/SRT except for material of backplate, this cabinet is the non-magnetic version; p/o AN/SRT-15A, 16A; CBTL part/dwg NL-900934-14-2 | |
| A-1401 | Low Failure Item | RAIL, assembly: left hand; c/o rail, rear latch, 4 rollers, 4 roller shafts; corrosion resisting steel, electropolish finish; o/a dimen 17-1/2 in. lg, 1 in. h, 0.390 in. wd; three no. 10-24 tapped mtg holes, spaced 4.093 in. and 9.438 in. c to c; CBTL part/dwg NL-900369-12-2; same as A-601 | For HVPS Chassis |
| A-1402 | Low Failure Item | RAIL, assembly: right hand; c/o rail, rear latch, 4 rollers, 4 roller shafts; corrosion resisting steel, electropolish finish; o/a dimen 17-1/2 in. lg, 1 in. h, 0.390 in. wd; three no. 10-24 tapped mtg holes, spaced 4.093 in. and 9.438 in. c to c; CBTL part/dwg NL-900369-12-1; same as A-602 | For HVPS Chassis |
| E-1401 | N17-B-77937-1901 | TERMINAL BOARD: molded melamine board; 10 double screw type term; barrier type; 4-3/8 in. lg, 7/8 in. wd, 13/32 in. h o/a; four 0.160 in. diam mtg holes, two on each end, spaced 4-1/8 in. c to c on lg, 5/16 in. c to c on wd; CJC type 10-140-B | External Cable Connector |
| E-1402 | | Same as E-1401 | External Cable Connector |
| E-1403 | N17-B-99999-0238 | TERMINAL BOARD: molded melamine board; 3 double screw type term; barrier type; 2-1/16 in. lg, 1-1/8 in. wd, 1/2 in. h o/a; four 0.175 in. diam mtg holes, two on each end, spaced 1-3/4 in. c to c on lg, and 27/64 in. c to c on wd; CJC type 3-141-B | 3 Phase AC Line Connector |
| E-1404 | Low Failure Item | TERMINAL BOARD: molded thermosetting plastic body, 3 no. 8-32 thd, stud type term; barrier type; 4-3/16 in. lg, 2-1/8 in. wd, 25/32 in. h o/a; four 0.193 in. diam mtg holes, two on each end, spaced 3-3/4 in. c to c on lg, 1-7/16 in. c to c on wd; CBTL part/dwg NL-900240-2; same as E-608 | High Voltage Output Connector |
| E-1405 | Shop Manufacture | CONTACT, ELECTRICAL: brass contactor, silver pl finish; press-fitted into a hard rubber body; 1/2 in. thk, 23/32 in. wd, 1-1/2 in. h o/a dimen; two 0.128 in. diam mtg holes located on side spaced 3/4 in. c to c and two 0.128 in. diam mtg holes counterbore 5/16 in. located in front spaced 1-1/16 in. c to c for universal mtg; CBTL part/dwg NL-900138-1; same as E-609 | u/w Interlock Switch S-1502 in HVPS |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|-----------------------------|
| E-1406 thru E-1409 | | Not Used | |
| E-1410 | | Same as E-1403 | External Cable Connector |
| H-1401 | Low Failure Item | HANGER, CABLE: extensible cable support w/cable clips; 3/4 in. diam of cable accommodated; 0.020 in. thk by 13/16 in. wd dimen of spring extensible cable blank; material of metallic parts brass, carbon spring steel, cad pl finish; c/o 16 cable clips riveted to spring extensible cable blank w/spring stiffener at one end; designed to support and permit lateral movement of cable; two 0.312 in. diam mtg holes at one end spaced 3/4 in. c to c and two 0.180 in. diam holes on other end spaced 0.375 in. c to c for fastening to connector receptacle housing; CBTL part/dwg NL-901230-12; same as H-601 | Cable Guide |
| J-1401 | N17-C-99999-2016 | CONNECTOR, RECEPTACLE, ELECTRICAL: c/o double row of 8 sliding contacts per row, female; 2-7/16 in. lg, 7/8 in. wd, 9/16 in. h; polarized; nonlocking; 5 amp, 600v DC; mtd by two 0.125 in. diam holes in diagonal corners, spaced 2.024 in. c to c in lg, and 0.460 in. c to c in wd; CPH type 26-190-16-1; same as J-601 | Connector to J-1501 in HVPS |
| J-1402 | | Same as J-1401 | Connector to J-1502 in HVPS |
| O-1401 | Low Failure Item | ROLLER, bearing: rear; corrosion resisting steel, electro-polish finish; 0.902 in. OD by 0.265 in. wd o/a; 0.4375 in. diam shaft hole; CBTL part/dwg NL-900365-1; p/o A-1401; same as O-602 | p/o Rail Assy |
| O-1402 | | Same as O-1401; p/o A-1402 | p/o Rail Assy |
| O-1403 | | Not Used | |
| O-1404 | | Not Used | |
| O-1405 | Low Failure Item | ROLLER, bearing: center; corrosion resisting steel, electro-polish finish; 0.988 in. OD by 0.156 in. wd o/a; 0.4375 in. diam shaft hole; CBTL part/dwg NL-900986-1; p/o A-1401; same as O-606 | p/o Rail Assy |
| O-1406 | | Same as O-1405; p/o A-1401 | p/o Rail Assy |
| O-1407 | Low Failure Item | SHAFT, roller: rear; monel cold drawn; 13/32 in. lg by 17/32 in. diam o/a; CBTL part/dwg NL-900366-1; p/o A-1401; same as O-601 | p/o Rail Assy |
| O-1408 | | Same as O-1407; p/o A-1402 | p/o Rail Assy |
| O-1409 | Shop Manufacture | SHAFT, roller: monel, cold drawn; 21/64 in. lg by 17/32 in. diam o/a; CBTL part/dwg NL-900985-1; p/o A-1401; same as O-607 | p/o Rail Assy |
| O-1410 | | Same as O-1409; p/o A-1401 | p/o Rail Assy |
| O-1411 | | Same as O-1409; p/o A-1401 | p/o Rail Assy |
| O-1412 | | Same as O-1409; p/o A-1402 | p/o Rail Assy |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|-----------------------------|
| O-1413 | | Same as O-1409; p/o A-1402 | p/o Rail Assy |
| O-1414 | | Same as O-1409; p/o A-1402 | p/o Rail Assy |
| O-1415 thru O-1418 | | Not Used | |
| O-1419 | | Same as O-1405; p/o A-1401 | p/o Rail Assy |
| O-1420 | | Same as O-1405; p/o A-1402 | p/o Rail Assy |
| O-1421 | | Same as O-1405; p/o A-1402 | p/o Rail Assy |
| O-1422 | | Same as O-1405; p/o A-1402 | p/o Rail Assy |
| O-1423 | | Not Used | |
| O-1424 | | Not Used | |
| O-1425 | Low Failure Item | SPRING: left hand; torsion type; 0.038 in. diam corrosion resisting steel spring wire; 1.116 in. lg, 0.250 in. wd, 0.250 in. h o/a; two turns, LH turns; one end straight, short end bent 90° on 1/32 in. radius, 1/8 in lg; mts over 0.156 in. diam pin; working moment is 16 in. oz. ±5 in. oz.; CBTL part/dwg NL-900981-1; p/o A-1401; same as O-603 | For Latch in Rail Assy |
| O-1426 | | Not Used | |
| O-1427 | Low Failure Item | SPRING: right hand; torsion type; 0.038 in. diam corrosion resisting steel spring wire; 1.116 in. lg, 0.250 in. h, two turns, RH turns; one end straight, short end bent 90° on 1/32 in. radius, 1/8 in. lg; mts over 0.156 in. diam pin-working moment is 16 in. oz. ±5 in. oz.; CBTL part/dwg NL-900982-1; p/o A-1402; same as O-604 | For Latch in Rail Assy |
| P-1401 | N17-C-800956-126 | CAP, PLATE: ceramic body w/tin pl beryllium copper grip; fits 9/16 in. diam cap; CNA type SPP-9; same as P-604 | Connector to J-1603 in HVPS |
| Z-1401 | N17-S-50967-6225 | FILTER, RADIO INTERFERENCE: 440v RMS, 5.0 amps RMS minimum, 60 cps; internal voltage drop at rated load less than 0.50v RMS; continuous duty; hermetically sealed; capable of operating in ambient temp of -20 °C to +65 °C with a relative humidity of 95% at +50 °C; 2-3/4 in. lg excluding term, 2 in. wd, 1-1/8 in. h max o/a dimen; two no. 8-32 thd stud w/solder lug term located 1 at each end diagonally opposite each other; two 3/16 in. diam mtg holes spaced 2-13/32 in. c to c; CBTL part/dwg NL-901569-1 | RF Filter |
| Z-1402 | | Same as Z-1401 | RF Filter |
| Z-1403 | | Same as Z-1401 | RF Filter |
| 1401-1499 | F16-C-10642-8235 | CABINET, ELECTRICAL EQUIPMENT, CY-1572/SRT: material of frame-steel, sides-aluminum, back plate-hot rolled steel pickled and oiled; grey enamel finish; o/a dimen 24 in. lg, 16 in. wd, 9-5/8 in. h; wired; used to house RADIO MODULATOR MD-230/SRT which mts on roller rails inside cabinet drawer; same as CABINET, ELECTRICAL EQUIPMENT CY-1572A/SRT except for material of back plate; p/o AN/SRT-15, 16; CBTL part/dwg NL-900935-14-1 | |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|----------------------------------|
| 1401-1499 | F16-C-10642-8236 | CABINET, ELECTRICAL EQUIPMENT, CY-1572A/SRT: material of frame-steel, sides-aluminum, back plate-corrosion resistant steel; grey enamel finish; o/a dimen 24 in. lg, 16 in. wd, 9-5/8 in. h; wired; used to house RADIO MODULATOR MD-230/SRT which mts on roller rails inside cabinet drawer; same as CABINET, ELECTRICAL EQUIPMENT CY-1572/SRT except for material of back plate, this cabinet is the non-magnetic version; p/o AN/SRT-15A, 16A; CBTL part/dwg NL-900935-14-2 | |
| A-1401 | | Not Used | |
| A-1402 | | Not Used | |
| A-1403 | Low Failure Item | RAIL, assembly: left hand; c/o rail, rear latch, 4 rollers, 4 roller shafts; corrosion resisting steel, electropolish finish; o/a dimen 17-1/2 in. lg, 1 in. h, 0.390 in. wd; three no. 10-24 tapped mtg holes, spaced 4.093 in. and 9.438 in. c to c; CBTL part/dwg NL-900369-12-2; same as A-601 | For HLRM Chassis |
| A-1404 | Low Failure Item | RAIL, assembly: right hand; c/o rail, rear latch, 4 rollers, 4 roller shafts; corrosion resisting steel, electropolish finish; o/a dimen 17-1/2 in. lg, 1 in. h, 0.390 in. wd; three no. 10-24 tapped mtg holes, spaced 4.093 in. and 9.438 in. c to c; CBTL part/dwg NL-900369-12-1; same as A-602 | For HLRM Chassis |
| E-1401 thru E-1405 | | Not Used | |
| E-1406 | N17-B-77937-1901 | TERMINAL BOARD: molded melamine board; 10 double screw type term; barrier type; 4-3/8 in. lg, 7/8 in. wd, 13/32 in. h o/a; four 0.160 in. diam mtg holes, two on each end, spaced 4-1/8 in. c to c on lg, 5/16 in. c to c on wd; CJC type 10-140-B; same as E-1401 | External Cable Connector |
| E-1407 | | Same as E-1406 | External Cable Connector |
| E-1408 | Low Failure Item | TERMINAL BOARD: molded thermosetting plastic body; 3 no. 8-32 thd stud type term; barrier type; 4-3/16 in. lg, 2-1/8 in. wd, 25/32 in. h o/a; four 0.193 in. diam mtg holes, two on each end, spaced 3-3/4 in. c to c on lg, 1-7/16 in. c to c on wd; CBTL part/dwg NL-900240-2; same as E-608 | High Voltage Connector to LLRM |
| E-1409 | Shop Manufacture | CONTACT, ELECTRICAL: brass contactor, silver pl finish; press-fitted into a hard rubber body; 1/2 in. thk, 23/32 in. wd, 1-1/2 in. h o/a dimen; two 0.128 in. diam mtg holes located on side spaced 3/4 in. c to c and two 0.128 in. diam mtg holes counterbore 5/16 in. located in front spaced 1-1/16 in. c to c for universal mtg; CBTL part/dwg NL-900138-1; same as E-609 | u/w Interlock Switch S-1602 HLRM |
| H-1401 | | Not Used | |
| H-1402 | Low Failure Item | HANGER, CABLE: extensible cable support w/cable clips; 3/4 in. diam of cable accommodated; 0.020 in. thk by 13/16 in. wd dimen of spring extensible cable blank; material of metallic parts brass, carbon spring steel, cad pl finish; c/o 16 cable clips riveted to spring extensible cable blank w/spring stiffener at one end; designed to support and permit lateral movement of cable; two 0.312 in. diam mtg holes at one end spaced 3/4 in. | Cable Guide |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|-------------------------------|
| H-1402 (cont) | | c to c and two 0.180 in. diam holes on other end spaced 0.375 in. c to c for fastening to connector receptacle housing; CBTL part/dwg NL-901230-12; same as H-601 | |
| J-1403 | N17-C-99999-2016 | CONNECTOR, RECEPTACLE, ELECTRICAL: c/o double row of 8 sliding contacts per row, female; 2-7/16 in. lg, 7/8 in. wd, 9/16 in. h; polarized; nonlocking; 5 amp, 600v DC; mtd by two 0.125 in. diam holes in diagonal corners, spaced 2.024 in. c to c in lg, and 0.460 in. c to c in wd; CPH type 26-190-16-1; same as J-601 | Receptacle for J-1601 in HLRM |
| J-1404 | | Same as J-1403 | Connector to J-1602 in HLRM |
| O-1401 thru O-1414 | | Not Used | |
| O-1415 | Shop Manufacture | SHAFT, roller: monel, cold drawn; 21/64 in. lg by 17/32 in. diam o/a; CBTL part/dwg NL-900985-1; p/o A-1403; same as O-607 | p/o Rail Assy |
| O-1416 | | Same as O-1415; p/o A-1403 | p/o Rail Assy |
| O-1417 | Low Failure Item | ROLLER, bearing: rear; corrosion resisting steel, electro-polish finish; 0.902 in. OD by 0.265 in. wd o/a; 0.4375 in. diam shaft hole; CBTL part/dwg NL-900365-1; p/o A-1403; same as O-602 | p/o Rail Assy |
| O-1418 | | Same as O-1417; p/o A-1404 | p/o Rail Assy |
| O-1419 thru O-1422 | | Not Used | |
| O-1423 | Low Failure Item | SHAFT, roller: rear; monel cold drawn; 13/32 in. lg by 17/32 in. diam o/a; CBTL part/dwg NL-900366-1; p/o A-1403; same as O-601 | p/o Rail Assy |
| O-1424 | | Same as O-1423; p/o A-1404 | p/o Rail Assy |
| O-1425 | | Not Used | |
| O-1426 | Low Failure Item | SPRING: left hand; torsion type; 0.038 in. diam corrosion resisting steel spring wire; 1.116 in. lg, 0.250 in. wd, 0.250 in. h o/a; two turns, LH turns; one end straight, short end bent 90° on 1/32 in. radius, 1/8 in. lg; mts over 0.156 in. diam pin; working moment is 16 in. oz. ±5 in. oz.; CBTL part/dwg NL-900981-1; p/o A-1403; same as O-603 | For Latch in Rail Assy |
| O-1427 | | Not Used | |
| O-1428 | Low Failure Item | SPRING: right hand; torsion type; 0.038 in. diam corrosion resisting steel spring wire; 1.116 in. lg, 0.250 in. h, two turns, RH turns; one end straight, short end bent 90° on 1/32 in. radius, 1/8 in. lg; mts over 0.156 in. diam pin; working moment is 16 in. oz. ±5 in. oz.; CBTL part/dwg NL-900982-1; p/o A-1404; same as O-604 | For Latch in Rail Assy |
| O-1429 | Low Failure Item | ROLLER, bearing: center; corrosion resisting steel, electro-polish finish; 0.988 in. OD by 0.156 in. wd o/a; 0.4375 in. diam shaft hole; CBTL part/dwg NL-900986-1; p/o A-1403; same as O-606 | p/o Rail Assy |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---------------------------------------|
| O-1430 | | Same as O-1429; p/o A-1403 | p/o Rail Assy |
| O-1431 | | Same as O-1429; p/o A-1403 | p/o Rail Assy |
| O-1432 | | Same as O-1429; p/o A-1404 | p/o Rail Assy |
| O-1433 | | Same as O-1429; p/o A-1404 | p/o Rail Assy |
| O-1434 | | Same as O-1429; p/o A-1404 | p/o Rail Assy |
| O-1435 | | Same as O-1415; p/o A-1403 | p/o Rail Assy |
| O-1436 | | Same as O-1415; p/o A-1404 | p/o Rail Assy |
| O-1437 | | Same as O-1415; p/o A-1404 | p/o Rail Assy |
| O-1438 | | Same as O-1415; p/o A-1404 | p/o Rail Assy |
| P-1401 | | Not Used | |
| P-1402 | N17-C-800956-126 | CAP, PLATE: ceramic body w/tin pl beryllium copper grip; fits 9/16 in. diam cap; CNA type SPP-9; same as P-604 | Connector to J-1603 in HLRM |
| P-1403 | N17-C-800646-201 | CAP, PLATE: ceramic body w/tin pl beryllium copper grip; fits 3/8 in. diam cap; CNA type SPP-3; same as P-605 | Connector to J-1604 in HLRM |
| P-1404 | | Same as P-1402 | Connector to J-1605 in HLRM |
| 1501-1599 | F16-P-67998-7157 | POWER SUPPLY, PP-1096/SRT: electronic type rectification; full wave; output data +3000v DC, 340 ma or +2400v DC, 550 ma; input data 220v AC or 440v AC, 60 cyc, three ph, -24v DC; o/a dimen 25-1/4 in. lg, 16 in. wd, 7-19/32 in. h; filter not incl; drawer mtd; used only at 500 w level operation of equipment; p/o AN/SRT-15, 16; CBTL part/dwg NL-981112-14 | |
| E-1501 | Shop Manufacture | TERMINAL BOARD: c/o term board, fuse clips, & 4 spacers; material of board melamine type GMG; incl 4 fuse clip term and 4 solder lug term screw mtd; w/o barriers; o/a dimen 5-5/8 in. lg, 2-7/16 in. wd, 1-15/16 in. thk approx; four no. 8-32 thd mtg holes on 1-5/8 in. by 1-15/16 in. mtg/c; used to mt F-1504, F-1505, F-1509 and F-1510; CBTL part/dwg NL-900062-2 | Mounts Fuses |
| E-1502 | Shop Manufacture | TERMINAL BOARD: c/o term board, fuse clips, & 4 spacers; material of board melamine type GMG; incl 6 fuse clip term and 6 solder lug term screw mtd; w/o barriers; o/a dimen 5-5/8 in. lg, 3-5/8 in. wd, 1-15/16 in. thk approx; four no. 8-32 thd mtg holes on 1-5/8 in. by 3-1/8 in. mtg/c; used to mt F-1501, F-1502, F-1503, F-1506, F-1507, F-1508; CBTL part/dwg NL-981125-2 | Mounts Fuses |
| E-1503 | Shop Manufacture | TERMINAL BOARD: c/o melamine link board, 4 nickel pl brass term links mtd in storage on two cad pl, brass no. 6-32 thd inserts; 8 screw type link term; w/o barriers; o/a dimen 3-3/8 in. lg, 1-1/4 in. wd, 15/16 in. thk approx; two 0.169 in. diam mtg holes spaced 3 in. c to c; CBTL part/dwg NL-981121-1 | For Changing 440v Input to 220v Input |
| E-1504 | Shop Manufacture | TERMINAL BOARD: c/o melamine link board, two nickel pl brass term links connected across term no. 2 & no. 3; 4 screw type link term; w/o barriers; o/a dimen 2-5/8 in. lg, 1-1/4 in. wd, 3/4 in. thk approx; two 0.169 in. diam mtg holes spaced diagonally on 2-5/16 in. centers; CBTL part/dwg NL-982302-1 | Connector Point |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--------------------|
| E-1505 | Shop Manufacture | TERMINAL BOARD: ceramic or melamine type GMG; 8 solder lug type term, one common term; o/a dimen 1-1/2 in. lg, 1-5/32 in. wd, 9/16 in. h; two no. 3-48 tapped mtg spacers 29/64 in. c to c; used to mt R-1509, R-1510, R-1511; CBY type 13025; CBTL part/dwg NL-960103-1-3; same as E-1013 | Component Mounting |
| E-1506 | Shop Manufacture | TERMINAL BOARD: melamine glass sheet type GMG; 8 double turret lug type term; w/o barriers; o/a dimen 2-9/16 in. lg, 1-3/4 in. wd, 15/32 in. thk approx; two 0.169 in. diam mtg holes 2-1/16 in. c to c; term silver pl; used to mt R-1501, R-1502, R-1503; CBTL part/dwg NL-900066-1 less resistors | Component Mounting |
| E-1507 | N17-L-250952-0247 | LENS, INDICATOR LIGHT: red, 1.0 in. effective lens diam, convex type, glass, smooth face, frosted back translucent; 3/4 in. lg, 1-1/8 in. diam o/a; holder brass, chrome pl finish; thd type 1.0 in. -27 thd, 1/8 in. lg; CAYZ part no. 51-111; p/o XI-1501 | p/o XI-1501 |
| E-1508 | | Same as E-1507; p/o XI-1502 | p/o XI-1502 |
| E-1509 | | Same as E-1507; p/o XI-1503 | p/o XI-1503 |
| E-1510 | N17-L-250052-645 | LENS, INDICATOR LIGHT: amber, 1.0 in. effective lens diam, convex type, glass, smooth face, frosted back translucent; 3/4 in. lg, 1-1/8 in. diam o/a; holder, brass, chrome pl finish; thd type 1.0 in. -27 thd, 1/8 in. lg; CAYZ part no. 51-113; p/o XI-1504 | p/o XI-1504 |
| E-1511 | N17-C-81204-4226 | CONTACT, ELECTRICAL: stationary contact screw assy; contact incl 1 point, 13/32 in. diam by 1/4 in. thk, fine silver; 15/16 in. lg, 13/32 in. diam o/a dimen excluding mtg nut; contact rated 1.5 amp; 1 term screw type w/point welded to one end; mtg by means of no. 10-32 thd brass hex nut; CAO part/dwg no. 26126.59-1; p/o K-1502 | p/o K-1502 |
| E-1512 | | Same as E-1511; p/o K-1502 | p/o K-1502 |
| E-1513 | | Same as E-1511; p/o K-1502 | p/o K-1502 |
| E-1514 | N17-C-81608-9856 | CONTACT, ELECTRICAL: c/o right hand contact finger assy and flexible lead assy; contact incl 1 point, 3/8 in. diam by 1/16 in. thk, fine silver, welded to one end of flat contact finger; 1-15/16 in. lg, 3/8 in. wd, 13/32 in. thk o/a dimen excluding lead assy; contact rated 1.5 amp; 1 term, wire lead assy with 7/32 in. diam hole for connection, located at opposite end from point; contact surface located 3/8 in. from edge of mtg slot; 1 slotted mtg hole 1/2 in. lg by 1/8 in. wd; CAO part/dwg no. 26493.23-1; p/o K-1502 | p/o K-1502 |
| E-1515 | | Same as E-1514; p/o K-1502 | p/o K-1502 |
| E-1516 | N17-C-81608-9846 | CONTACT, ELECTRICAL: c/o left hand contact finger assy and flexible lead assy; contact incl 1 point, 3/8 in. diam by 1/16 in. thk, fine silver, welded to one end of flat contact finger; 1-15/16 in. lg, 3/8 in. wd, 13/32 in. thk o/a dimen excluding lead assy; contact rated 1.5 amp; 1 term, wire lead assy with 7/32 in. diam hole for connection, located at opposite end from point; contact surface located 3/8 in. from edge of mtg slot; 1 slotted mtg hole 1/2 in. lg by 1/8 in. wd; CAO part/dwg no. 26493.23-3; p/o K-1502 | p/o K-1502 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|----------------------------|
| E-1517 | N17-C-79785-3972 | CONTACT, ELECTRICAL: 2 points located at one end of yoke opposite each other, fine silver, 1/4 in. diam by 0.130 in. thk; o/a dimen 2 in. lg by 1/4 in. wd excluding pigtail assy; 1 term, wire pigtail w/eyelet lug soldered to opposite end from points; 1 mtg slot located in center of yoke 3/32 in. wd by 3/16 in. lg, 1 mtg hole 3/32 in. diam located on term end w/mtg centers spaced 3/4 in. c to c; CSD part no. 16337; p/o K-1501 | p/o K-1501 |
| E-1518 | N17-C-80988-6056 | CONTACT, ELECTRICAL: 2 points located at one end of bracket opposite each other, fine silver, 3/16 in. diam by 0.130 in. thk; o/a dimen 15/16 in. h by 25/32 in. wd by 1/4 in. d; one 0.140 in. diam mtg hole located at opposite end from points; CSD part no. 16332; p/o K-1501 | p/o K-1501 |
| E-1519 | N17-C-80688-9736 | CONTACT, ELECTRICAL: 2 points located at one end of bracket opposite each other, fine silver, one side 7/32 in. diam, other side 1/8 in. diam by 7/64 in. thk; o/a dimen 1-17/64 in. h by 3/4 in. wd by 1/4 in. d; one 0.140 in. diam mtg hole located at opposite end from points; CSD part no. 18335; p/o K-1501 | p/o K-1501 |
| E-1520 | | Same as E-1517; p/o K-1501 | p/o K-1501 |
| E-1521 | | Same as E-1517; p/o K-1501 | p/o K-1501 |
| E-1522 | | Same as E-1518; p/o K-1501 | p/o K-1501 |
| E-1523 | | Same as E-1518; p/o K-1501 | p/o K-1501 |
| E-1524 | | Same as E-1518; p/o K-1501 | p/o K-1501 |
| F-1501 | N17-F-99999-0127 | FUSE, CARTRIDGE: 3-1/2 amps, 600v AC; 250% overload for 56 seconds, 500% for 19 seconds; ferrule type term, 1-7/16 in. lg by 13/16 in. diam; enclosed type, fibre tube; one time; non-indicating; 5 in. lg by 13/16 in. diam; dual element; CFA type no. FRS 3-1/2 | 440v AC 3 Phase Protection |
| F-1502 | | Same as F-1501 | 440v AC 3 Phase Protection |
| F-1503 | | Same as F-1501 | 440v AC 3 Phase Protection |
| F-1504 | | Same as F-1501 | 440v AC 3 Phase Protection |
| F-1505 | | Same as F-1501 | 440v AC 3 Phase Protection |
| F-1506 | For Reference Only | FUSE, CARTRIDGE: 6-1/4 amps, 6600v; 200% overload for 80 seconds, 600% for 12.3 seconds; ferrule type term, 1-7/16 in. lg by 13/16 in. diam; enclosed type, fibre tube; one time; non-indicating; 5 in. lg by 13/16 in. diam o/a; dual element; CFA type no. FRS 6-1/4; (Used only when 220 power is supplied) | 220v AC 3 Phase Protection |
| F-1507 | | Same as F-1506 | 220v AC 3 Phase Protection |
| F-1508 | | Same as F-1506 | 220v AC 3 Phase Protection |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|---------------------------------|
| F-1509 | | Same as F-1506 | 220v AC 3 Phase Protection |
| F-1510 | | Same as F-1506 | 220v AC 3 Phase Protection |
| H-1501 | Low Failure Item | SLIDE, chassis: left hand; c/o inner and outer slide, front latch, ball spacer w/stainless steel balls, and pin stop; corrosion resisting steel, electropolish finish; 23-1/8 in. lg closed, 1-5/8 in. h, 9/16 in. wd o/a; nine 0.169 in. diam mtg holes, countersunk, spaced 2-1/2 in. c to c; two 1/4 in. -28 NF-2 thd mtg holes spaced 1 in. c to c located on back end; CBTL part/dwg NL-900037-12-2; same as H-501 | For HVPS Chassis |
| H-1502 | Low Failure Item | SLIDE, chassis: right hand; c/o inner & outer slide, front latch, ball spacer w/stainless steel balls, and pin stop; corrosion resisting steel, electropolish finish; 23-1/8 in. lg closed, 1-5/8 in. h, 9/16 in. wd o/a; nine 0.169 in. diam mtg holes, countersunk, spaced 2-1/2 in. c to c; two 1/4 in. -28 NF-2 thd mtg holes 1 in. c to c located on back end; CBTL part/dwg NL-900037-12-1; same as H-502 | For HVPS Chassis |
| I-1501 | N17-L-3917-300 | LAMP, INCANDESCENT: 125v DC, 6 w; MBCA Ref Dwg Group 7, double contact bayonet candelabra base, S-6, clear, 1 tungsten filament, C-7A; 1-13/16 in. max o/a h; over 25 hrs rated life; any burning position; CAYZ type 6S6DC-125; same as I-501 | Phase "POWER-ON" Indicator |
| I-1502 | | Same as I-1501 | Phase "POWER-ON" Indicator |
| I-1503 | | Same as I-1501 | Phase "POWER-ON" Indicator |
| I-1504 | | Same as I-1501 | Phase "POWER-ON" Indicator |
| J-1501 | N17-C-99999-2015 | CONNECTOR, RECEPTACLE, ELECTRICAL: consists of double row of 8 sliding contacts per row, male, flat; 2-7/16 in. lg, 7/8 in. wd, 9/16 in. h; excluding contacts and term; w/ partially enclosed plastic shell; polarized; non-locking; 5 amp, 600v DC; mtd by two 0.125 in. diam holes in diagonal corners, spaced 2.024 in. c to c in lg and 0.460 in. c to c in wd; CPH type 26-159-16; same as P-401 | Unit Inter-Connecting |
| J-1502 | | Same as J-1501 | Unit Inter-Connecting |
| J-1503 | N17-I-59628-9328 | INSULATOR, FEEDTHRU: bushing and bowl w/tapped cap and thd stud; steatite, brass; silver pl; 2-3/4 in. lg, 1-1/8 in. diam o/a; 45 amp; 12,000v; CCCV type 1125-A modified; CBTL part/dwg NL-900217-1 | H. V. Connector |
| K-1501 | N17-R-65155-8105 | RELAY, ARMATURE: non-pile-up type, 3PDT single break, AC, 115v, 230v, 440v, 8 amp, 4 amp, 2 amp; 1 winding, 1 inductive winding, DC, 300 ohms resistance, 24v ±25% operating voltage; 9 term on contacts, 2 term on coil; continuous duty; 3-1/2 in. lg, 2-1/2 in. wd, 1-15/16 in. h; mts by means of four 1/8 in. by 5/32 in. mtg holes spaced 3 in. c to c by 2 in. c to c; pl to resist corrosion and salt spray; CSD part no. 1XCX-143; CBTL part/dwg NL-983521-1 | Speech/CW High Voltage Transfer |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--|
| K-1502 | N17-R-65143-5305 | RELAY, ARMATURE: spring loaded wiping contacts, 5PST, three normally open and two normally closed, single break, AC-DC, normally open 440v, 60 cyc, normally closed 24v DC, normally open 1.5 amp, normally closed 4 amp; one winding, one inductive winding, DC, 180 ohms resistance, 24v operating voltage, 0.133 amp operating current; 10 term on contacts, 2 term on coil, screw type; 6 in. lg, 3-5/8 in. wd, 3-1/8 in. h; two 0.175 in. diam mtg holes on 5-3/8 in. mtg/c; open type frame; CAO type no. K-43163, dwg no. 26608.31; CBTL part/dwg NL-980996-1 | 3 Phase Plate Contactor |
| K-1503 | | Not Used | |
| K-1504 | N17-R-68405-1001 | RELAY, MOTOR DRIVEN: DPST, normally open, 100 ma, 220v RMS, 300 ma, 24v DC, 60 cyc; AC, synchronous type, 220v, 60 cyc; 2 brass screw type term for motor, 4 brass screw type term for contacts; adjustable type, 2.5 to 45 second time range; reset facilities provided; 4-1/2 in. lg, 3 in. wd, 2-3/32 in. h; four 0.159 in. diam holes on 4-1/8 in. by 2-5/8 in. mtg/c; CCX no. TC-45S, assembly dwg D1-C-2, outline dwg A4678; CBTL part/dwg NL-980972-1 | Rectifier Plate Protection |
| L-1501 | N16-R-29903-1513 | REACTOR: swinging choke; one section; 2 hy min inductance, 0.010 amp min DC, 8 hy max inductance, 0.600 amp max DC; 25 ohms DC resistance; 3800v RMS test; hermetically sealed, steel case; 5-7/16 in. lg by 4-1/2 in. sq excluding term; four 0.288 in. diam mtg holes on 3-9/16 in. sq c to c; two solder lug type term on insulators, 7/8 in. lg by 9/16 in. diam, located on opposite end from mtg surface; CUT dwg F-3620; CBTL part/dwg NL-980881-1 | Filter for 3000v Plate Supply |
| M-1501 | N17-M-32915-3251 | METER, TIME: elapsed time indicator; synchronous self-starting electric motor, 1/6 rpm; electro-mechanical control; direct reading; automatic start and stop; 2-1/2 in. h, 2-1/8 in. wd, 2-3/64 in. d o/a; 5 rotating drum counters, each calibrated 0 to 9 w/window opening face, operate from 230v, 60 cyc line; two 0.132 in. diam mtg holes spaced 1-7/8 in. c to c; total registry of counter is 9999.9 hours, figures on first four drums in black and on last drum in red, flush mtg; CHP type 5701-1/6; same as M-501 | Recording Total Operating Time of H. V. Rectifier Filament |
| M-1502 | | Same as M-1501 | Recording Total Operating Time of H. V. Rectifier Plate |
| O-1501 | N17-C-800934-501 | CLIP, ELECTRICAL: grid plate style 7, MBCA Ref Dwg Group 37; brass, cad pl; 1-3/8 in. lg, 1/2 in. wd; CNA type no. 12; same as O-501 | Plate Cap for V-1501 |
| O-1502 | | Same as O-1501 | Plate Cap for V-1502 |
| O-1503 | | Same as O-1501 | Plate Cap for V-1503 |
| O-1504 | | Same as O-1501 | Plate Cap for V-1504 |
| O-1505 | | Same as O-1501 | Plate Cap for V-1505 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--------------------------------------|
| O-1506 | | Same as O-1501 | Plate Cap for V-1506 |
| O-1507 | Low Failure Item | SPRING: flat type; beryllium copper alloy no. 25 cond 1/4 H, 0.025 in. thk strip per MIL-C-947, silver pl; one no. 3-48 thd mtg hole on term; 1-3/8 in. lg, 15/16 in. h; CBTL part/dwg NL-900142-1; p/o S-1502; same as O-510 | Contact Spring of S-1502 |
| O-1508 | | Same as O-1507; p/o S-1502 | Contact Spring of S-1502 |
| O-1509 | Procured on demand by nearest Naval Shore Supply Activity | RETAINER, bearing: upper; c/o rectangular, corrosion resisting steel, electropolish finish ball spacer w/twelve 0.125 in. diam stainless steel balls, self-retained; 11.344 in. lg, 1/4 in. wd, 0.125 in. thk o/a dimen; CCCS dwg A-9019.9-1 (Revision no. 3); p/o H-1501; same as O-506 | p/o Chassis Slide |
| O-1510 | | Same as O-1509; p/o H-1502 | p/o Chassis Slide |
| O-1511 | Procure on demand by nearest Naval Shore Supply Activity | RETAINER, bearing: lower, c/o rectangular, corrosion resisting steel, electropolish finish ball spacer w/twelve 0.125 in. diam stainless steel balls, self-retained; 10.844 in. lg, 1/4 in. wd, 0.125 in. thk o/a dimen; CCCS dwg A-9019.9-2 (Revision no. 3); p/o H-1501; same as O-508 | p/o Chassis Slide |
| O-1512 | | Same as O-1511; p/o H-1502 | p/o Chassis Slide |
| O-1513 | Low Failure Item | SPRING: loop type; for latch; 0.038 in. diam corrosion resisting steel spring wire; 2-1/2 in. lg, 11/16 in. h o/a; one end semi-hook type, one end open; irregular shape; CBTL part/dwg NL-900991-1; p/o H-1501; same as O-509 | For Latch in Chassis Slide |
| O-1514 | Low Failure Item | SPRING: helical compression type; 0.032 in. diam music wire per NAVY spec 22W11C; 3/8 in. h, 1/2 in. diam o/a; 3-1/2 turns, RH or LH wound; first and last 3/4 turns are flat; cad pl; CBTL part/dwg NL-900018-1; u/w H-1501; same as O-507 | Stop Button Spring for Chassis Slide |
| O-1515 | | Same as O-1514; u/w H-1502 | Stop Button Spring for Chassis Slide |
| O-1516 | | Same as O-1513; p/o H-1502 | p/o Chassis Slide |
| R-1501 | N16-R-49662-506 | RESISTOR, FIXED, COMPOSITION: 220 ohms, ±10%; 2 w; per spec JAN-R-11; JAN type RC42BF221K | Voltage Dropping |
| R-1502 | | Same as R-1501 | Voltage Dropping |
| R-1503 | | Same as R-1501 | Voltage Dropping |
| R-1504 | | Not Used | |
| R-1505 | N16-R-66141-3006 | RESISTOR, FIXED, WIRE WOUND: 2,500 ohms, ±5%; 22 w; per spec MIL-R-26; MIL type RW21G252 | Voltage Dropping |
| R-1506 | | Same as R-1505 | Voltage Dropping |
| R-1507 | | Same as R-1505 | Voltage Dropping |
| R-1508 | | Same as R-1505 | Voltage Dropping |
| R-1509 | N16-R-50166-508 | RESISTOR, FIXED, COMPOSITION: 5,600 ohms, ±10%; 2 w; per spec JAN-R-11; JAN type RC42BF562K; same as R-1063 | Voltage Dropping |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|----------------------------|
| R-1510 | | Same as R-1509 | Voltage Dropping |
| R-1511 | | Same as R-1509 | Voltage Dropping |
| S-1501 | N17-S-75025-8961 | SWITCH, TOGGLE: 3PST; 20 amps, 600v AC; bakelite body; dimen excluding handle 2-5/16 in. lg, 1-11/16 in. wd, 1-3/4 in h; 6 screw type term; two 7/32 in. diam mtg holes on 3-9/32 in. mtg/c; CHH type 7810-U | 3 Phase Emergency "ON-OFF" |
| S-1502 | N17-S-99999-0626 | SWITCH, INTERLOCK: push with snap action cheater; 2 piece door type; DPST, male and female type, beryllium copper alloy strip contact; thermosetting plastic molding body; 1-1/2 in. lg by 1-1/2 in. wd by 1/2 in. thk o/a dimen excluding term posts and push rod; 2 screw type term located on both ends of switch; mtd by means of two 0.128 in. diam countersunk holes spaced 0.875 in. apart; interrupts 24v DC; CBTL part/dwg NL-900059-2; same as S-501 | Interlock Switch |
| T-1501 | N17-T-72978-3001 | TRANSFORMER, POWER, STEP-DOWN: hermetically sealed metal case; 220/440v AC, 50/60 cyc, single ph input; 4 output windings, no. 1 secondary 2.5v at 15.0 amps, no. 2 secondary 2.5v at 5.0 amps, no. 3 secondary 2.5v at 5.0 amps, no. 4 secondary 2.5v at 5.0 amps; primary test voltage 1500v RMS all others 5200v RMS; Robertson potting compound; 4-1/2 in. sq, 6-1/32 in. h, MBCA Ref Dwg Group 12; 12 standoff type term; four no. 10-32 thd inserts on 3-9/16 in. sq mtg/c mtd opposite electrostatic shield; CUT part no. F-3616; CBTL part/dwg NL-980883-1 | Rectifier Filament Supply |
| T-1502 | N17-T-78264-6589 | TRANSFORMER, POWER, STEP-UP: open-frame, fosterized case; 220/440v AC, 50/60 cyc input 3 ph delta; one output winding, 1835/2260v RMS, 0.280 amp at 1835v, 0.186 amp at 2260v; primary test voltage 1500v RMS, secondary 7000v RMS; forced air cooled; 11-1/8 in. lg by 6-3/4 in. wd by 6-3/4 in. h, MBCA Ref Dwg Group 12; 36 screw type term and 12 shorting clips opposite mtg surface; 8 holes on 3-7/16 in. by 5-1/8 in. mtg/c; electrostatic shield grounded to laminations; CUT part no. F-3618-2; CBTL part/dwg NL-980880-1 | Rectifier Plate Supply |
| V-1501 | N16-T-53228 | ELECTRON TUBE: diode; per JAN-1A; JAN type 3B28; same as V-501 | High Voltage Rectifier |
| V-1502 | | Same as V-1501 | High Voltage Rectifier |
| V-1503 | | Same as V-1501 | High Voltage Rectifier |
| V-1504 | | Same as V-1501 | High Voltage Rectifier |
| V-1505 | | Same as V-1501 | High Voltage Rectifier |
| V-1506 | | Same as V-1501 | High Voltage Rectifier |
| XI-1501 | For Replacement Use N17-L-76885-5301 | LIGHT, INDICATOR: supplied w/lens, 1 in. diam, red, convex; screw type lens holder; accommodates S6 DC bulb w/ bayonet base-of double contact type; 125v DC, 0.6 amp, 75 w; brass, 1 in. diam shell, enclosed; 3 in. lg, 1-1/8 in. diam o/a dimen; 1 mtg hole required 1 in. in. lg, accommodates 21/32 in. thk panel; horizontally mtd; lamp replaceable from front of | Retainer for I-1501 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|-------------------|---|--|-----------------------|
| XI-1501 (cont) | | panel; 2 solder lug type term, located on socket base, both insulated from shell; CAYZ type 51202-11-1; same as XI-501 | |
| XI-1502 | | Same as XI-1501 | Retainer for I-1502 |
| XI-1503 | | Same as XI-1501 | Retainer for I-1503 |
| XI-1504 | N17-L-99999-0128 | LIGHT, INDICATOR: supplied with convex lens, 1 in. diam, amber, smooth face, back of lens frosted; translucent; 125v DC, 0.6 amp, 75 w; accommodates S-6 lamp, double contact bayonet base; 3 in. lg by 1-1/8 in. diam o/a; one mtg hole required, 1 in. diam; lamp horizontally mtd, replaceable from front of panel; two solder lug type term located on end opposite lens, both lugs insulated from shell; CAYZ part no. 51202-11-3 | Retainer for I-1504 |
| XV-1501 | N16-S-60856-2981 | SOCKET, ELECTRON TUBE: four contacts, beryllium copper, silver pl; medium size; round shape; o/a dimen excluding term 2-13/16 in. diam, 1-27/32 in. h; steatite base; mtd above chassis with four mtg holes, 0.210 in. diam spaced 90° apart on 2-5/16 in. diam circle; aluminum shell; CEJ part no. 123-209-200; CBTL part/dwg NL-900829-1 | Socket for V-1501 |
| XV-1502 | | Same as XV-1501 | Socket for V-1502 |
| XV-1503 | | Same as XV-1501 | Socket for V-1503 |
| XV-1504 | | Same as XV-1501 | Socket for V-1504 |
| XV-1505 | | Same as XV-1501 | Socket for V-1505 |
| XV-1506 | | Same as XV-1501 | Socket for V-1506 |
| 1601-1699 | F16-M-42280-3102 | MODULATOR, RADIO, MD-230/SRT: A3 type of emission, MBCA Ref Dwg Group 5; amplitude modulation 320 w audio output; for audio modulator 170 to 4800 cyc frequency response ±1 db; 1000 ohms input impedance, 6000 ohms output impedance; external and self-contained power supplies, 220 or 440v AC, 60 cyc, single ph and DC voltages of +2400v, -24v, self contained power supply -50v DC; o/a dimen 25-1/4 in. lg, 16 in. wd, 7-19/32 in. h; used only at 500 w level operation of equipment; p/o AN/SRT-15, 16; CBTL part/dwg NL-900481-14 | |
| C-1601 | N16-C-20185-8455 | CAPACITOR, FIXED, ELECTROLYTIC: 1 section; 100 mf; 100v DCW; per spec JAN-C-62; JAN type CE51E101H | Bias Supply Filter |
| C-1602 | N16-C-19443-7080 | CAPACITOR, FIXED, ELECTROLYTIC: 1 section; 4 mf; 450v DCW; per spec JAN-C-62; JAN type CE61E040R | Screen By-Pass |
| C-1603 | For Replacement Use N16-C-48826-2489 | CAPACITOR, FIXED, PAPER DIELECTRIC: 1 mf +20%-10%; 5000v DCW; per spec JAN-C-25; JAN type CP70E1EN105V | Plate Supply Filter |
| C-1604 | | Same as C-1603 | Plate Supply Filter |
| CR-1601 | N17-R-51129-8815 | RECTIFIER, METALLIC: selenium; single ph, full wave, center tap, circuit MBCA Ref Dwg 1 Group 23; 39v AC new, input per arm at 35°C, single ph; 31v DC output new, 28.5v DC aged, 0.210 amp max current, full wave rectification, resistive or inductive load; rectangular shape; 2-1/4 in. lg incl mtg studs, | Bias Supply Rectifier |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|-------------------|---|--|--|
| CR-1601 (cont) | | 1-1/2 in. lg less mtg studs, 1 in. wd, 1-5/16 in. h incl term, 1 in. h less term; one no. 8-32 thd bolt through stack; 3 solder lug type term, located on plates; salt spray resistant coating, tropicalized per JAN-T-152; CFT type no. 102D4597S; CBTL part/dwg NL-980875-1 | |
| E-1601 | Low Failure Item | BALL, electrode: brass, cad pl; spherical with stud for mtg; 15/16 in. lg, 0.375 in. diam; one no. 6-32 NC-2 thd, stud 7/16 in. lg for mtg; CBTL part/dwg NL-981436-1; same as E-1018 | Safety Device for T-1601 |
| E-1602 | | Same as E-1601 | Safety Device for T-1601 |
| E-1603 | For Reference only | BOARD, link: four term with no. 6-32, 1/4 in. lg thd BHMS; 2-5/8 in. lg by 1-1/4 in. wd by 13/16 in. h o/a; term spaced 5/8 in. c to c in lg and wd; melamine; two 0.169 in. diam mtg holes in diagonal corners; CBTL part/dwg NL-900500-1 | Used to change from from 220v to 440v and from 440v to 220v |
| E-1604 | Shop Manufacture | TERMINAL BOARD: c/o term board, aluminum baffle mtd on standoffs, fuse clip assy, plate, and elastic grommets; material of board, melamine resin glass cloth type GMG; incl 2 screw type term on 2 brass, silver pl connectors; 8-5/16 in. lg, 2-1/2 in. wd, 7-1/16 in. h approx o/a dimen; aluminum bracket mtg, two used, each w/three no. 8-32 thd Pem fasteners, 4 screw mtg to term board & 2 screw mtg to chassis all on 3-3/4 in. mtg/c; used for mtg R-1629 and R-1630; CBTL part/dwg NL-900524-12 | Component Mounting |
| E-1605 | Shop Manufacture | TERMINAL BOARD: melamine glass sheet type GMG; 8 double turret lug type term; w/o barriers; o/a dimen 6-1/8 in. lg, 2 in. wd, 15/32 in. thk approx; four 0.169 in. diam mtg holes spaced 5-5/8 in. on lg by 1-1/2 in. wd mtg/c; term silver pl; used to mount R-1621 thru R-1627 incl; CBTL part/dwg NL-900483-2 less resistors | Component Mounting |
| E-1606 | N17-B-99999-0239 | TERMINAL BOARD: melamine type GMG; 14 single screw type term; barrier type, 5-7/8 in. lg, 7/8 in. wd, 13/32 in. h; four 0.160 mtg holes spaced 5-5/8 in. c to c in lg and 0.312 in. c to c in wd; CJC type 14-140-Y-B | Interconnect Sub-Chassis of HLRM to Main Chassis |
| E-1607 | Shop Manufacture | TERMINAL BOARD: melamine glass sheet type GMG; incl 4 screw type term; w/o barriers; 3-1/8 in. lg, 4-1/2 in. h, 1 in. thk o/a dimen; 3 bracket mtg, two no. 6-32 thd Pem fasteners on 2-1/4 in. mtg/c and one 7/32 in. diam mtg hole irregularly spaced; used for mtg R-1601 and R-1602; CBTL part/dwg NL-900490-2 less resistors | Component Mounting |
| E-1608 | N16-S-34607-6039 | SHIELD, ELECTRON TUBE: brass, nickel pl; cylindrical shape; 2-1/4 in. lg; 0.958 in. diam o/a dimen; bayonet mtg; per spec JAN-S-28A; JAN type TS102U03; same as O-1021 | For V-1603 |
| E-1609 | | Same as E-1608 | For V-1604 |
| E-1610 | | Same as E-1608 | For V-1605 |
| E-1611 | Low Failure Item | INSULATOR, cap: cylindrical; laminated phenolic tubing per JAN-P-79 form T. R. type LTS-E4; brown; 2-11/16 in. lg, 1-3/16 in. ID, 1-1/2 in. OD o/a; CBTL part/dwg NL-900517-1 | For C-1601 |
| E-1612 | N17-L-250177-331 | LENS, INDICATOR LIGHT: clear, 1/2 in. effective lens diam, lg dome type; polystyrene, internally fluted; 13/16 in. lg, 5/8 in. wd o/a dimen; unmounted; 9/16 in. -27 male thd, 3/16 in. lg, to fit body; CAYZ part no. 53-997; p/o XI-1601 | p/o XI-1601 |
| E-1613 | | Same as E-1612, p/o XI-1602 | p/o XI-1602 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|-----------------------------|
| H-1601 | N16-C-300799-201 | RETAINER, CAPACITOR: cylindrical tube clamp, stainless steel type 302; 27/32 in. thk by 2 in. lg approx o/a, 1-1/2 in. ID; bracket mtd; CAIS part/dwg 926D-2 | For C-1601 |
| H-1602 | Low Failure Item | SLIDE, chassis: left hand, c/o inner and outer slide, front latch, ball spacer w/stainless steel balls, and pin stop; corrosion resisting steel, electropolish finish; 23-1/8 in. lg closed, 1-5/8 in. h, 9/16 in. wd o/a; nine 0.169 in. diam mtg holes, countersunk, spaced 2-1/2 in. c to c, two 1/4 in. -28 NF-2 thd mtg holes spaced 1 in. c to c located on back end; CBTL part/dwg NL-900037-12-2; same as H-501 | For HLRM Chassis |
| H-1603 | Low Failure Item | SLIDE, chassis: right hand, c/o inner and outer slide, front latch, ball spacer w/stainless steel balls, and pin stop; corrosion resisting steel, electropolish finish; 23-1/8 in. lg closed, 1-5/8 in. h, 9/16 in. wd o/a; nine 0.169 in. diam mtg holes, countersunk, spaced 2-1/2 in. c to c; two 1/4 in. -28 NF-2 thd mtg holes, 1 in. c to c located on back end; CBTL part/dwg NL-900037-12-1; same as H-502 | For HLRM Chassis |
| I-1601 | G17-L-6806-130 | LAMP, GLOW: neon, 105-125v, 1/25 w; MBCA Ref Dwg Group 7, single contact bayonet candelabra base, T-3-1/4, clear, orange-red glow; 1-3/16 in. max o/a h; CG type NE-51; same as I-503 | 3000v DC Indicator |
| I-1602 | | Same as I-1601 | 350v DC Indicator |
| J-1601 | N17-C-99999-2015 | CONNECTOR, RECEPTACLE, ELECTRICAL: consists of double row of 8 sliding contacts per row, male, flat; 2-7/16 in. lg, 7/8 in. wd, 9/16 in. h excluding contacts and term; w/partially enclosed plastic shell; polarized; non-locking; 5 amp, 600v DC; mtd by two 0.125 in. diam holes in diagonal corners, spaced 2.024 in. c to c in lg and 0.460 in. c to c in wd; CPH type 26-159-16; same as P-401 | Inter-Unit Wiring |
| J-1602 | | Same as J-1601 | Inter-Unit Wiring |
| J-1603 | N17-I-59628-9328 | INSULATOR, FEEDTHRU: bushing and bowl w/tapped cap and thd stud; steatite, brass; silver pl; 2-3/4 in. lg, 1-1/8 in. diam o/a; 45 amp; 12,000v; CCCV type 1125-A modified; CBTL part/dwg NL-900217-1; same as J-1503 | H. V. Connector |
| J-1604 | N17-I-59705-1251 | INSULATOR, FEEDTHRU: brass; silver pl; 15/16 in. lg, 5/8 in. diam o/a; CNA type XS-7 modified; CBTL part/dwg NL-900095-1; same as J-503 | Medium Voltage Input |
| J-1605 | | Same as J-1603 | H. V. Connector |
| J-1606 | N17-C-73107-5183 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female; straight type; phone type connector; dielectric green nylon; 29/32 in. lg, 5/16 in. wd incl hex coupling nut o/a dimen; 1000v peak; w/inclosing shell, cylindrical shape, brass, nickel pl; not polarized, 1 hole, 1/4 in. diam; 1/4-32 in. thd on receptacle for mating w/coupling nut; CARO part 225D | Test Point Grid 1 V-1602 |
| J-1607 | | Same as J-1606 | Test Point Grid 1 V-1601 |
| K-1601 | N17-R-65144-2453 | RELAY, ARMATURE: contact arrangement 1A1B1C, MBCA Ref Dwg Group 4 (twin contacts), single break, AC-DC, uncoded contact C rated at 500v, code 24 contacts A and B rated at 4 amp, uncoded contact C rated at 0.070 amps; 1 winding, | Screen Ungrounding |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--|
| K-1601 (cont) | | 1 inductive winding, DC, 300 ohms resistance, 24v operating voltage; 7 term on contacts, 2 term on coil; continuous duty; 2-1/4 in. lg, 1-1/8 in. wd, 1-45/64 in. h; mtd by means of two no. 6-32 tapped holes, spaced 3/4 in. c to c; impregnated coil, mycalex insulation on form 1C contacts, code 24 contacts rated 150 w w/above mentioned current; CRY type J, part no. H-49556; CBTL part/dwg NL-981046-1 | |
| K-1602 | | Not Used | |
| K-1603 | N17-R-65142-3475 | RELAY, ROTARY: power type, SPDT, double break, AC, 10, 000v, 0.2 amp; 2 windings, 2 inductive windings, DC, 115 ohms $\pm 10\%$, 24v, 0.2 amp; 4 term on contacts, 2 term on coil; continuous duty; 3-5/16 in. lg, 1-5/8 in. wd, 3-1/4 in. h; mtd by means of four no. 6-32 thd tapped holes spaced 1.625 in. by 0.938 in. c to c; CCCQ part/dwg 7RX-2; CBTL part/dwg NL-982669-1 | Shorting Relay for Secondary of T-1601 |
| K-1604 | | Not Used | |
| K-1605 | | Same as K-1603 | Modulator Output Selector |
| O-1601 | N17-C-800487-451 | CLIP, ELECTRICAL: grid plate style 7 MBCA Ref Dwg Group 37; steel; 7/8 in. lg, 3/8 in. wd, 3/8 in. h; 1 solder lug type term; used as electron tube plate clip; CNA type no. 24; same as O-1301 | Plate Cap for V-1601 |
| O-1602 | | Same as O-1601 | Plate Cap for V-1602 |
| O-1603 | Procured on demand by nearest Naval Shore Supply Activity | RETAINER, bearing: upper; c/o rectangular, corrosion resisting steel, electropolish finish ball spacer w/twelve 0.125 in. diam stainless steel balls, self-retained; 11.344 in. lg, 1/4 in. wd, 0.125 in. thk o/a dimen; CCCS dwg A-9019.9-1 (Revision no. 3); p/o H-1602; same as O-506 | p/o Chassis Slide |
| O-1604 | | Same as O-1603; p/o H-1603 | p/o Chassis Slide |
| O-1605 | Low Failure Item | SPRING: loop type; for latch; 0.038 in. diam corrosion resisting steel spring wire; 2-1/2 in. lg, 11/16 in. h o/a; one end semi-hook type, one end open; irregular shape; CBTL part/dwg NL-900991-1; p/o H-1602; same as O-509 | For Latch in Chassis Slide |
| O-1606 | Low Failure Item | SPRING: helical compression type; 0.032 in. diam music wire per NAVY spec 22W11C; 3/8 in. h, 1/2 in. diam o/a; 3-1/2 turns, RH or LH wound; first and last 3/4 turns are flat; cad pl; CBTL part/dwg NL-900018-1; u/w H-1602; same as O-507 | Stop Button Spring for Chassis Slide |
| O-1607 | | Same as O-1606; u/w H-1603 | Stop Button Spring for Chassis Slide |
| O-1608 | Procured on demand by nearest Naval Shore Supply Activity | RETAINER, bearing: lower; c/o rectangular, corrosion resisting steel, electropolish finish ball spacer w/twelve 0.125 in. diam stainless steel balls, self-retained; 10.844 in. lg, 1/4 in. wd, 0.125 in. thk o/a dimen; CCCS dwg A-9019.9-2 (Revision no. 3); p/o H-1602; same as O-508 | p/o Chassis Slide |
| O-1609 | | Same as O-1608; p/o H-1603 | p/o Chassis Slide |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------|---|--|----------------------------------|
| O-1610 | Low Failure Item | SPRING: flat type; beryllium copper alloy no. 25 cond 1/4 H, 0.025 in. thk strip per MIL-C-947, silver pl; one no. 3-48 thd mtg hole on term; 1-3/8 in. lg, 15/16 in. h; CBTL part/dwg NL-900142-1; p/o S-1602 | For Contact in S-1602 |
| O-1611 | | Same as O-1610; p/o S-1602 | For Contact in S-1602 |
| O-1612 | | Same as O-1605; p/o H-1603 | For Latch in Chassis Slide |
| R-1601 | N16-R-68382-1286 | RESISTOR, FIXED, WIRE WOUND: 500 ohms, $\pm 5\%$; 9 w; per spec JAN-R-26A; JAN type RW56J501 | Grid Leak V-1601 |
| R-1602 | | Same as R-1601 | Grid Leak V-1602 |
| R-1603 | N16-R-68407-6296 | RESISTOR, FIXED, WIRE WOUND: 1,800 ohms, $\pm 5\%$; 9 w; per spec JAN-R-26A; JAN type RW56J182 | Bias Supply |
| R-1604 thru R-1619 | | Not Used | |
| R-1620 | N16-R-49464-506 | RESISTOR, FIXED, COMPOSITION: 56 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42BF560K | Filter Resistor -43v Bias Supply |
| R-1621 | N16-R-50839-751 | RESISTOR, FIXED, COMPOSITION: 510,000 ohms, $\pm 5\%$; 1 w; per spec JAN-R-11; JAN type RC30BF514J | Dropping Resistor I-1601 |
| R-1622 | | Same as R-1621 | Dropping Resistor I-1601 |
| R-1623 | | Same as R-1621 | Dropping Resistor I-1601 |
| R-1624 | | Same as R-1621 | Dropping Resistor I-1601 |
| R-1625 | | Same as R-1621 | Dropping Resistor I-1601 |
| R-1626 | | Same as R-1621 | Dropping Resistor I-1601 |
| R-1627 | N16-R-57015-231 | RESISTOR, FIXED, COMPOSITION: 220,000 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30BF224K; same as R-518 | Dropping Resistor I-1601 |
| R-1628 | N16-R-50822-811 | RESISTOR, FIXED, COMPOSITION: 470,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF474K; same as R-1035 | Dropping Resistor I-1602 |
| R-1629 | N16-R-62235-7670 | RESISTOR, FIXED, WIRE WOUND: 50,000 ohms, $\pm 5\%$; 86 w; per spec JAN-R-26A; JAN type RW12F503 | Bleeder 3000v Supply |
| R-1630 | | Same as R-1629 | Bleeder 3000v Supply |
| R-1631 | N16-R-50679-231 | RESISTOR, FIXED, COMPOSITION: 150,000 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30BF154K | Voltage Divider |
| R-1632 | N16-R-50634-231 | RESISTOR, FIXED, COMPOSITION: 100,000 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30BF104K; same as R-1024 | Voltage Divider |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---|
| R-1633 | | Same as R-1632 | Voltage Divider |
| S-1601 | | Not Used | |
| S-1602 | N17-S-99999-0626 | SWITCH, INTERLOCK: push with snap action cheater; 2 piece door type; DPST, male and female type, beryllium copper alloy strip contact; thermosetting plastic molding body; 1-1/2 in. lg by 1-1/2 in. wd by 1/2 in. thk o/a dimen excluding term posts and push rod; 2 screw type term located on both ends of switch; mtd by means of two 0.128 in. diam countersunk holes spaced 0.875 in. apart; interrupts 24v DC; CBTL part/dwg NL-900059-2; same as S-501 | Interlock Switch |
| T-1601 | N17-T-63342-2090 | TRANSFORMER, AUDIO FREQUENCY: modulation type, 22,000 ohms primary impedance, center tapped, 8,000 ohm secondary impedance tapped at 6,000 and 7,000 ohms; primary rated at 130 ma balanced, secondary 340 ma; test voltage 7500v RMS; upright hermetically sealed steel case, grain oriented silicon steel core; o/a dimen MBCA Ref Dwg Group 12, 7 in. lg, 5-1/4 in. wd, 8-7/8 in. h; 355 w max audio operating level; 1.62 to 1 turns ratio, primary to secondary; ±1 db from 100 to 4500 cps frequency response, not tuned; 7 solder lug type term located on bottom; 4 inserts 1/4 in. -20 thd by 1/2 in. d, 6-1/8 in. by 6-1/8 in. c to c MBCA Ref Dwg Group 12; CAVM part/dwg S-2259-2; CBTL part/dwg NL-980976-1 | HLRM Output |
| T-1602 | N17-T-72978-2001 | TRANSFORMER, POWER, STEP-DOWN: hermetically sealed metal case; 220/440v AC, 50/60 cyc, single ph input; 2 output windings, no. 1 secondary 82v at 0.031 amp center tapped, no. 2 secondary 5v at 13.0 amps center tapped; 1500v RMS test voltage; Robertson potting compound; 3-5/16 in. diam, 4-1/8 in. h with 3-13/32 in. sq mtg base; 10 standoffs 7/16 in. diam, 1/2 in. h, solder lug type term located opposite mtg surface; four 0.201 in. diam mtg holes on 2-11/16 in. c to c; electrostatic shield; stamped per MIL-T-27; CUT part no. F-3614 per CBTL part/dwg NL-980873-1 | Filament and Bias Supply for V-1601 and V-1602; used for 220/440v, 60 Cycle Input Power |
| V-1601 | N16-T-54421 | ELECTRON TUBE: tetrode; per JAN-1A; JAN type 4D21 | HLRM Amplifier |
| V-1602 | | Same as V-1601 | HLRM Amplifier |
| V-1603 | N16-T-52001 | ELECTRON TUBE: diode; per JAN-1A; JAN type OA2; same as V-1303 | Screen Voltage Regulator for V-1601, V-1602 |
| V-1604 | N16-T-52001-5 | ELECTRON TUBE: diode; per JAN-1A; JAN type OB2; same as V-1021 | Screen Voltage Regulator for V-1601, V-1602 |
| V-1605 | | Same as V-1604 | Screen Voltage Regulator for V-1601, V-1602 |
| XC-1601 | N16-S-63515-4151 | SOCKET, ELECTRON TUBE: 8 contacts, brass, silver pl; octal type; oval; 1-7/8 in. lg, 1-3/8 in. wd, 11/16 in. h excluding term; phenolic dielectric insulator; one piece saddle mtg, bottom mtg; 1-1/8 in. diam chassis hole required, 2 mtg holes 0.156 in. diam, 1.500 in. c to c; per spec JAN-S-28A; JAN type TS101P01; same as XC-1034 | Socket for C-1601 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|-------------------------|---|--|--|
| XI-1601 | N17-L-76763-1597 | LIGHT, INDICATOR: supplied w/lens, 5/8 in. diam, clear, fluted, screw type holder; accommodates neon T3-1/4, NE51 lamp, single contact miniature bayonet base, 110v; brass shell, black nickel finish, enclosed; 2-5/16 in. lg, 15/16 in. diam o/a dimen, 1 mtg hole required 11/16 in. diam, accommodates up to 1/4 in. max thk panel; horizontally mtd; lamp replaceable from front of panel; 2 solder lug type term, located on socket base, both insulated from shell; incl built in 51000 ohm 1/3 w composition resistor; CAYZ type 53408-XP18-997; same as XI-503 | Retainer for I-1601 |
| XI-1602 | | Same as XI-1601 | Retainer for I-1602 |
| XV-1601 | N16-S-61876-8870 | SOCKET, ELECTRON TUBE: 5 contacts, brass clip steel spring, cad pl; giant; sq shape; 2-7/8 in. lg, 2-7/8 in. wd, 3/4 in. h; ceramic body; above chassis mtg, 4 mtg holes, 0.190 in. diam spaced on corners w/2.250 in. c to c; CEJ type no. 122-275-1 dwg no. H-122-275 | Socket for V-1601 |
| XV-1602 | | Same as XV-1601 | Socket for V-1602 |
| XV-1603 | N16-S-62603-6702 | SOCKET, ELECTRON TUBE: 7 contacts, brass, nickel pl; miniature; incl metal shield base, 0.800 in. diam, 0.611 in. h; incl center shield, 0.125 in. ID; oval; 1-1/8 in. lg, 0.800 in. wd, 25/32 in. h o/a dimen excluding term; molded thermosetting plastic body; one piece saddle mtg, 5/8 in. diam chassis hole required, 2 mtg holes 0.125 in. diam, 0.875 in. c to c; per spec JAN-S-28A; JAN type TS102P01; same as XV-1303 | Socket for V-1603 |
| XV-1604 | | Same as XV-1603 | Socket for V-1604 |
| XV-1605 | | Same as XV-1603 | Socket for V-1605 |
| 2001-2999 | F16-O-53520-7644 | OSCILLATOR, RADIO FREQUENCY, 0-275/SRT: frequency range 300 kc to 26 mc, 3 bands, 10 cps steps, any frequency between 300 kc and 26 mc may be selected in 10 cps steps according to the setting of the front panel dials; 0.004 to 0.0439 w power output rating; crystal frequency control; AC operating power requirements 115v AC, 60 cycles, single ph; DC operating requirements -24v DC, +250v DC, +250v DC regulated; external power supply; integral coils; o/a dimen 25-5/8 in. lg, 16 in. wd, 18-7/32 in. h; mounts in ELECTRICAL EQUIPMENT CABINET CY-1571/SRT; incl CONTROL-INDICATOR C-1352/SRT; p/o AN/SRT-14, 15, 16; CBTL part/dwg NL-960444-27 | |
| A-2051 | Low Failure Item | MOUNTING: coil slug; p/o tuning slug assembly; 19/32 in. lg, 3/8 in. wd o/a; mtd by two 0.147 in. holes 13/32 in. c to c indexed 15°; CCCP Cat. no. W1D632-NR w/wings 45° angle, modified; CBTL part/dwg NL-960083-1 | Mounting for Coil Slug, Unit 3 |
| A-2051.1 thru A-2051.10 | | Same as A-2051 | Mounting for Coil Slugs, Unit 3 |
| C-2001 | N16-C-54460-4315 | CAPACITOR, FIXED, PAPER DIELECTRIC: 3 sections, each section 100,000 mmf +20%-10%; 600v DCW; per spec JAN-C-25; JAN type CP69B5FF104V | B+ Filter, Unit 1 |
| C-2002 | N16-C-33617-4746 | CAPACITOR, FIXED, MICA DIELECTRIC: 10,000 mmf ±5%; 300v DCW; per spec JAN-C-5; JAN type CM35C103J | Spark Suppressor Y-2001 Thermostat, Unit 1 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force. | Name and Description | Locating Function |
|--------------------------|--|---|---|
| C-2003 | For Replacement Use N16-C-31080-2015 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 1000 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB11EA102G | Screen Coupling V-2001, Unit 1 |
| C-2004 | | Same as C-2003 | Grid Coupling V-2001, Unit 1 |
| C-2005 | For Replacement Use N16-C-30183-3292 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 510 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA511G | Osc. Tank V-2001, Unit 1 |
| C-2006 | | Same as C-2005 | Osc. Tank V-2001, Unit 1 |
| C-2007 | | Same as C-2003 | Grid Coupling V-2002, Unit 1 |
| C-2008 | | Same as C-2003 | Grid Coupling V-2002, Unit 1 |
| C-2009 | | Same as C-2003 | Grid Coupling V-2003, Unit 1 |
| C-2010 | | Same as C-2003 | Grid Coupling V-2003, Unit 1 |
| C-2011 | | Not Used | |
| C-2012 | For Replacement Use N16-C-28386-8771 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 91 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB11EA910G | Coupling L-2001, Unit 1 |
| C-2013 | For Replacement Use N16-C-31502-2449 | CAPACITOR, FIXED BUTTON, MICA DIELECTRIC: 1500 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA152G | Osc. Spurious Trap L-2002, Unit 1 |
| C-2014 thru C-2030 | | Not Used | |
| C-2031 | N16-C-18653-9364 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: case style no. 2 MBCA Ref Dwg Group 1; 1000 mmf $\pm 10\%$; 500v DCW; temp coefficient variable; molded phenolic body, insulated; 0.250 in. diam by 0.562 in lg o/a dimen; 2 axial wire type term; term mtg; impregnated w/microcrystalline wax; CER Hi-K Ceramicon GP2K1000 | Grid Coupling V-2031, Unit 2 |
| C-2032 | | Same as C-2001 | |
| C-2032A | | p/o C-2032 | Screen By-Pass V-2031, Unit 2 |
| C-2032B | | p/o C-2032 | Screen By-Pass V-2032, Unit 2 |
| C-2032C | | p/o C-2032 | Plate By-Pass V-2034, Unit 2 |
| C-2033 | For Replacement Use N16-C-29813-9792 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 360 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB11EA361G | Filter Tuning Z-2033, Unit 2 |
| C-2034 | | Same as C-2003; p/o Z-2031 | Filter Tuning Z-2031, Unit 2 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|--|
| C-2035 | | Same as C-2003; p/o Z-2031 | Filter Tuning V-2032, Unit 2 |
| C-2036 | | Same as C-2031 | Filter Tuning V-2032, Unit 2 |
| C-2037 | For Replacement Use N16-C-31080-2031 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 1000 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA102G | Cathode Follower Coupling V-2033, Unit 2 |
| C-2038 | N16-C-15528-8911 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 3 mmf ± 0.25 mmf; 500v DCW; per spec JAN-C-20A, JAN type CC21LJ030C | Filter Coupling 1 mc Filter, Unit 2 |
| C-2039 | For Replacement Use N16-C-29602-9582 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 270 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB11EA271G; p/o Z-2032 | Filter Tuning Z-2032, Unit 2 |
| C-2040 | | Same as C-2039; p/o Z-2032 | Filter Tuning Z-2032, Unit 2 |
| C-2041 | | Same as C-2039; p/o Z-2033 | Filter Tuning Z-2033, Unit 2 |
| C-2042 thru C-2050 | | Not Used | |
| C-2051 | For Reference Only | CAPACITOR, ASSEMBLY: 1692 ± 3 mmf; made up of C-2051A, C-2051B, C-2051C and C-2051D; p/o Z-2052 | (90-91) kc Tank S-2051C, Unit 3 |
| C-2051A | For Reference Only | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 910 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA911G; p/o C-2051 | (90-91) kc Tank S-2051C, Unit 3 |
| C-2051B | For Reference Only | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 750 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB20FA751G; p/o C-2051 | (90-91) kc Tank S-2051C, Unit 3 |
| C-2051C | For Reference Only | CAPACITOR, FIXED, CERAMIC DIELECTRIC: neg temp coef 750 mmf/mf/ $^{\circ}$ C; chosen from NL-961545-2 to make up difference between C-2051, C-2051A and C-2051B; per spec JAN-C-20A; CBTL part/dwg NL-961545-2; p/o C-2051 | (90-91) kc Tank S-2051C, Unit 3 |
| C-2051D | | Same as C-2051C; p/o C-2051 | (90-91) kc Tank S-2051C, Unit 3 |
| C-2052 | For Reference Only | CAPACITOR ASSEMBLY: 1471 ± 3 mmf; made up of C-2052A, C-2052B, C-2052C and C-2052D; p/o Z-2052 | (91-92) kc Tank S-2051C, Unit 3 |
| C-2052A | For Reference Only | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 820 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA821G; p/o C-2052 | (91-92) kc Tank S-2051C, Unit 3 |
| C-2052B | For Reference Only | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 620 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA621G; p/o C-2052 | (91-92) kc Tank S-2051C, Unit 3 |
| C-2052C | For Reference Only | CAPACITOR, FIXED, CERAMIC DIELECTRIC: neg temp coef 750 mmf/mf/ $^{\circ}$ C; chosen from NL-961545-2 to make up difference between C-2052, C-2052A and C-2052B; per JAN-C-20A; CBTL part/dwg NL-961545-2; p/o C-2052 | (91-92) kc Tank S-2051C, Unit 3 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|------------------------------------|
| C-2052D | | Same as C-2052C; p/o C-2052 | (91-92) kc Tank S-2052C, Unit 3 |
| C-2053 | For Reference Only | CAPACITOR ASSEMBLY: 1258 \pm 3 mmf; made up of C-2053A, C-2053B, C-2053C and C-2053D; p/o Z-2052 | (92-93) kc Tank S-2052C, Unit 3 |
| C-2053A | | Same as C-2051B; p/o C-2053 | (92-93) kc Tank S-2052C, Unit 3 |
| C-2053B | For Reference Only | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 470 mmf \pm 2%; 500v DCW; per BuShips 16C41; NAVY type CB20EA471G; p/o C-2053 | (92-93) kc Tank S-2052C, Unit 3 |
| C-2053C | For Reference Only | CAPACITOR, FIXED, CERAMIC DIELECTRIC: neg temp coef 750 mmf/mf/ $^{\circ}$ C; chosen from NL-961545-2 to make up difference between C-2053, C-2053A and C-2053B; per spec JAN-C-20A; CBTL part/dwg NL-961545-2; p/o C-2053 | (92-93) kc Tank S-2052C, Unit 3 |
| C-2053D | | Same as C-2053C; p/o C-2053 | (92-93) kc Tank S-2052C, Unit 3 |
| C-2054 | For Reference Only | CAPACITOR, ASSEMBLY: 1055 \pm 3 mmf; made up of C-2054A, C-2054B, C-2054C and C-2054D; p/o Z-2052 | (93-94) kc Tank S-2052C, Unit 3 |
| C-2054A | For Reference Only | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 560 mmf \pm 2%; 500v DCW; per BuShips 16C41; NAVY type CB20EA561G; p/o C-2054 | (93-94) kc Tank S-2052C, Unit 3 |
| C-2054B | | Same as C-2053B; p/o C-2054 | (93-94) kc Tank S-2052C, Unit 3 |
| C-2054C | For Reference Only | CAPACITOR, FIXED, CERAMIC DIELECTRIC: neg temp coef 750 mmf/mf/ $^{\circ}$ C; chosen from NL-961545-2 to make up difference between C-2054, C-2054A and C-2054B per spec NL-961545-2; per JAN-C-20A; p/o C-2054 | (93-94) kc Tank S-2052C, Unit 3 |
| C-2054D | | Same as C-2054C; p/o C-2054 | (93-94) kc Tank S-2052C, Unit 3 |
| C-2055 | For Reference Only | CAPACITOR ASSEMBLY: 860 \pm 3 mmf; made up of C-2055A, C-2055B, C-2055C and C-2055D; p/o Z-2052 | (94-95) kc Tank S-2052C, Unit 3 |
| C-2055A | | Same as C-2005; p/o C-2055 | (94-95) kc Tank S-2052C, Unit 3 |
| C-2055B | For Reference Only | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 330 mmf \pm 2%; 500v DCW; per BuShips 16C41; NAVY type CB20EA331G; p/o C-2055 | (94-95) kc Tank S-2052C, Unit 3 |
| C-2055C | For Reference Only | CAPACITOR, FIXED, CERAMIC DIELECTRIC: neg temp coef 750 mmf/mf/ $^{\circ}$ C; chosen from NL-961545-2 to make up difference between C-2055, C-2055A and C-2055B; per spec JAN-C-20A; CBTL part/dwg NL-961545-2; p/o C-2055 | (94-95) kc Tank S-2052C, Unit 3 |
| C-2055D | | Same as C-2055C; p/o C-2055 | (94-95) kc Tank S-2052C, Unit 3 |
| C-2056 | For Reference Only | CAPACITOR ASSEMBLY: 671 \pm 3 mmf; made up of C-2056A, C-2056B, C-2056C and C-2056D; p/o Z-2052 | (95-96) kc Tank S-2052C, Unit 3 |
| C-2056A | | Same as C-2055B; p/o C-2056 | (95-96) kc Tank S-2052C, Unit 3 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|------------------------------------|
| C-2056B | | Same as C-2055B; p/o C-2056 | (95-96) kc Tank S-2052C, Unit 3 |
| C-2056C | For Reference Only | CAPACITOR, FIXED, CERAMIC DIELECTRIC: neg temp coef 750 mmf/mf/°C; chosen from NL-961545-2 to make up difference between C-2056, C-2056A and C-2056B; per spec JAN-C-20A; CBTL part/dwg NL-961545-2; p/o C-2056 | (95-96) kc Tank S-2052C, Unit 3 |
| C-2056D | | Same as C-2056C; p/o C-2056 | (95-96) kc Tank S-2052C, Unit 3 |
| C-2057 | For Reference Only | CAPACITOR ASSEMBLY: 495 ±3 mmf; made up of C-2057A, C-2057B, C-2057C and C-2057D; p/o Z-2052 | (96-97) kc Tank S-2052C, Unit 3 |
| C-2057A | For Reference Only | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 240 mmf ±2%; 500v DCW; per BuShips 16C41; NAVY type CB20EA241G; p/o C-2057 | (96-97) kc Tank S-2052C, Unit 3 |
| C-2057B | | Same as C-2057A; p/o C-2057 | (96-97) kc Tank S-2052C, Unit 3 |
| C-2057C | For Reference Only | CAPACITOR, FIXED, CERAMIC DIELECTRIC: neg temp coef 750 mmf/mf/°C; chosen from NL-961545-2 to make up difference between C-2057 and C-2057A, C-2057B; per spec JAN-C-20A; CBTL part/dwg NL-961545-2; p/o C-2057 | (96-97) kc Tank S-2052C, Unit 3 |
| C-2057D | | Same as C-2057C; p/o C-2057 | (96-97) kc Tank S-2052C, Unit 3 |
| C-2058 | For Reference Only | CAPACITOR ASSEMBLY: 323 ±3 mmf; made up of C-2058A, C-2058B, C-2058C and C-2058D; p/o Z-2052 | (97-98) kc Tank S-2052C, Unit 3 |
| C-2058A | For Reference Only | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 160 mmf ±2%; 500v DCW; per BuShips 16C41; NAVY type CB20EA161G; p/o C-2058 | (97-98) kc Tank S-2052C, Unit 3 |
| C-2058B | For Reference Only | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 150 mmf ±2%; 500v DCW; per BuShips 16C41; NAVY type CB20EA151G; p/o C-2058 | (97-98) kc Tank S-2052C, Unit 3 |
| C-2058C | For Reference Only | CAPACITOR, FIXED, CERAMIC DIELECTRIC: neg temp coef 750 mmf/mf/°C; chosen from NL-961545-2 to make up difference between C-2058, C-2058A and C-2058B; per spec JAN-C-20A; CBTL part/dwg NL-961545-2; p/o C-2058 | (97-98) kc Tank S-2052C, Unit 3 |
| C-2058D | | Same as C-2058C; p/o C-2058 | (97-98) kc Tank S-2052C, Unit 3 |
| C-2059 | For Reference Only | CAPACITOR ASSEMBLY: 158 ±3 mmf; made up of C-2059A, C-2059B, C-2059C and C-2059D; p/o Z-2052 | (98-99) kc Tank S-2052C, Unit 3 |
| C-2059A | For Reference Only | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 75 mmf ±2%; 500v DCW; per BuShips 16C41; NAVY type CB20EA750G; p/o C-2059 | (98-99) kc Tank S-2052C, Unit 3 |
| C-2059B | | Same as C-2059A; p/o C-2059 | (98-99) kc Tank S-2052C, Unit 3 |
| C-2059C | For Reference Only | CAPACITOR, FIXED, CERAMIC DIELECTRIC: neg temp coef 750 mmf/mf/°C; chosen from NL-961545-2 to make up difference between C-2059, C-2059A and C-2059B; per spec JAN-C-20A; CBTL part/dwg NL-961545-2; p/o C-2059 | (98-99) kc Tank S-2052C, Unit 3 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|--|
| C-2059D | | Same as C-2059C; p/o C-2059 | (98-99) kc Tank S-2052C, Unit 3 |
| C-2060 | For Reference Only | CAPACITOR ASSEMBLY: made up of C-2060A, C-2060B, C-2060C and C-2060D; p/o Z-2051 | Main Tank Z-2051, Unit 3 |
| C-2060A | For Reference Only | CAPACITOR SUB-ASSEMBLY: 4796 \pm 3 mmf at 100 KC; matched pair c/o 4700 mmf \pm 2%; 2500v DCW; mica dielectric molded; JAN type #CM60F472G per spec JAN-C-5 and max of two button mica capacitors; 500v DCW type #CB20EA per spec BuShips 16C41; p/o C-2060 | Main Tank Z-2051, Unit 3 |
| C-2060B | For Reference Only | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 91 mmf \pm 1%; neg temp coef 750 (tol +120) mmf/mf/ $^{\circ}$ C; 500v DCW; per spec JAN-C-20A; JAN type CC26UJ910F; p/o C-2060 | Main Tank Z-2051, Unit 3 |
| C-2060C | | Same as C-2060B; p/o C-2060 | Main Tank Z-2051, Unit 3 |
| C-2060D | | Same as C-2060B; p/o C-2060 | Main Tank Z-2051, Unit 3 |
| C-2061 | | Same as C-2003; p/o Z-2051 | Grid Coupling V-2051, Unit 3 |
| C-2062 | For Replacement Use N16-C-31502-2408 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 1500 mmf \pm 2%; 500v DCW; per BuShips 16C41; NAVY type CB11EA152G | Filter Tuning T-2051, Unit 3 |
| C-2063 | | Same as C-2013 | Filter Tuning T-2051, Unit 3 |
| C-2064 | | Same as C-2001 | |
| C-2064A | | p/o C-2064 | Screen By-Pass V-2051, Unit 3 |
| C-2064B | | p/o C-2064 | B+ Filter V-2051, Unit 3 |
| C-2064C | | p/o C-2064 | B+ Filter V-2051, Unit 3 |
| C-2065 | | Same as C-2002 | Thermostat Spark Suppressor S-2054, Unit 3 |
| C-2066 | For Reference Only | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 51 mmf \pm 2%; neg. temp coef 750 (tol +120) mmf/mf/ $^{\circ}$ C; 500v DCW; per spec JAN-C-20A; JAN type CC21UJ510G; p/o Z-2052 | Osc. Auxiliary Temp Compensa- tion, Unit 3 |
| C-2067 thru C-2100 | | Not Used | |
| C-2101 | | Same as C-2031 | Grid Coupling V-2101, Unit 4 |
| C-2102 | For Reference Only | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1000 mmf \pm 20%; 350v DCW; p/o XV-2101 | Screen By-Pass V-2101, Unit 4 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|--|
| C-2103 | For Replacement Use N16-C-28547-8581 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 100 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB11EA101G; p/o Z-2101 | Filter Tuning Z-2101, Unit 4 |
| C-2104 | | Same as C-2103; p/o Z-2101 | Filter Tuning Z-2101, Unit 4 |
| C-2105 | | Same as C-2031 | Grid Leak By-Pass V-2102, Unit 4 |
| C-2106 | | Same as C-2102; p/o XV-2102 | Screen By-Pass V-2102, Unit 4 |
| C-2107 | | Same as C-2103; p/o Z-2102 | Filter Tuning Z-2102, Unit 4 |
| C-2108 | N16-C-17069-2651 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 100 mmf $\pm 2\%$; 500v DCW; per spec JAN-C-20A; JAN type CC26UJ101G; same as C-1050 | Filter Tuning Z-2102, Unit 4 |
| C-2109 | | Same as C-2037 | Output Coupling J-2102, Unit 4 |
| C-2110 | | Same as C-2102; p/o XV-2101 | Fil. By-Pass V-2101, Unit 4 |
| C-2111 | | Same as C-2102; p/o XV-2102 | Fil. By-Pass V-2102, Unit 4 |
| C-2112 | | Same as C-2031 | B+ Filter, Unit 4 |
| C-2113 thru C-2125 | | Not Used | |
| C-2126 | | Same as C-2003; p/o Z-2126 | Grid Coupling V-2127, Unit 12 |
| C-2127 | | Same as C-2033; p/o Z-2126 | Control Tube Capacitor V-2127, Unit 12 |
| C-2128 | | Same as C-2052A; p/o Z-2126 | Osc. Tank Z-2126, Unit 12 |
| C-2129 | | Same as C-2002 | B+ By-Pass V-2127, Unit 12 |
| C-2130 | | Same as C-2003; p/o Z-2126 | Grid Coupling V-2128, Unit 12 |
| C-2131 | | Same as C-2002 | Cathode By-Pass V-2127, Unit 12 |
| C-2132 | | Same as C-2001 | B+ Decoupling, Unit 12 |
| C-2132A | | p/o C-2132 | B+ Filter, Unit 12 |
| C-2132B | | p/o C-2132 | B+ Filter, Unit 12 |
| C-2132C | | p/o C-2132 | B+ Filter, Unit 12 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|--|
| C-2133 | | Same as C-2062 | Output Filter Tuning T-2126, Unit 12 |
| C-2134 | | Same as C-2062 | Output Filter Tuning T-2126, Unit 12 |
| C-2135 | N16-C-30915-5840 | CAPACITOR, FIXED, MICA DIELECTRIC: 1 section; working voltage 500v DC, 350v AC, 1250v peak working; 910 mmf $\pm 2\%$; -20 to +100 parts/ million/ deg C temp coefficient; style no. 11-P Ref Dwg Group 1; metal case; 0.463 in. diam, 7/16 in. lg o/a dimen; 1 solder lug term; schematic diagram 2-R Ref Dwg Group 1; one mtg hole no. 3-48 thd, 7/64 in. deep; CAN type M-36 "VAR"; p/o Z-2126 | Osc. Tank Z-2126, Unit 12 |
| C-2136 | | Not Used | |
| C-2137 | N16-C-16909-2151 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 82 mmf $\pm 2\%$; 500v DCW; per spec JAN-C-20A; JAN type CC26UJ820G; p/o Z-2126 | Osc. Tank Compens- ation Z-2126, Unit 12 |
| C-2138 | | Not Used | |
| C-2139 | | Same as C-2002 | Spark Suppressor S-2126, Unit 12 |
| C-2140 thru C-2150 | | Not Used | |
| C-2151 | | Same as C-2031 | Suppressor Coupling V-2151, Unit 5 |
| C-2152 | | Same as C-2031 | Grid Coupling V-2151, Unit 5 |
| C-2153 | | Same as C-2001 | |
| C-2153A | | p/o C-2153 | Cathode By-Pass V-2151, Unit 5 |
| C-2153B | | p/o C-2153 | Screen By-Pass V-2151, Unit 5 |
| C-2153C | | p/o C-2153 | B+ Filter, Unit 5 |
| C-2154 | | Same as C-2001 | |
| C-2154A | | p/o C-2154 | Cathode By-Pass V-2152, Unit 5 |
| C-2154B | | p/o C-2154 | Screen By-Pass V-2152, Unit 5 |
| C-2154C | | p/o C-2154 (Not Used) | |
| C-2155 | For Replacement Use N16-C-29444-7112 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 240 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB11EA241G; p/o Z-2151 | Filter Tuning Z-2151, Unit 5 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|---|
| C-2156 | | Same as C-2155; p/o Z-2151 | Filter Tuning Z-2151, Unit 5 |
| C-2157 | | Same as C-2155; p/o Z-2152 | Filter Tuning Z-2152, Unit 5 |
| C-2158 | | Same as C-2155; p/o Z-2152 | Filter Tuning Z-2152, Unit 5 |
| C-2159 | For Replacement Use N16-C-29128-2392 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 180 mmf ±2%; 500v DCW; per BuShips 16C41; NAVY type CB11EA181G; p/o Z-2153 | Filter Tuning Z-2153, Unit 5 |
| C-2160 | | Same as C-2159; p/o Z-2153 | Filter Tuning Z-2153, Unit 5 |
| C-2161 | | Same as C-2159; p/o Z-2154 | Filter Tuning Z-2154, Unit 5 |
| C-2162 | | Same as C-2159; p/o Z-2154 | Filter Tuning Z-2154, Unit 5 |
| C-2163 | | Same as C-2102; p/o XV-2153 | Cathode By-Pass V-2153, Unit 5 |
| C-2164 | | Same as C-2102; p/o XV-2153 | Screen By-Pass V-2153, Unit 5 |
| C-2165 | For Replacement Use N16-C-27993-9192 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 68 mmf ±2%; 500v DCW; per BuShips 16C41; NAVY type CB11EA680G; p/o Z-2155 | Filter Tuning Z-2155, Unit 5 |
| C-2166 | | Same as C-2165; p/o Z-2155 | Filter Tuning Z-2155, Unit 5 |
| C-2167 | | Same as C-2102; p/o XV-2153 | Fil. By-Pass V-2153, Unit 5 |
| C-2168 | | Same as C-2102; p/o XV-2154 | Fil. By-Pass V-2154, Unit 5 |
| C-2169 | For Replacement Use N16-C-30526-2505 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 680 mmf ±2%; 500v DCW; per BuShips 16C41; NAVY type CB20EA681G | Output Coupling Z-2156, Unit 5 |
| C-2170 | N16-C-16780-9630 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 68 mmf ±2%; 500v DCW; per spec JAN-C-20A; JAN type CC26TH680G | Filter Tuning Z-2156, Unit 5 |
| C-2171 | | Same as C-2031 | B+ Filter, Unit 5 |
| C-2172 | | Same as C-2102; p/o XV-2154 | Screen By-Pass V-2154, Unit 5 |
| C-2173 | | Same as C-2102; p/o XV-2154 | Cathode By-Pass V-2154, Unit 5 |
| C-2174 | N16-C-32250-9759 | CAPACITOR, FIXED, MICA DIELECTRIC: 3300 mmf ±10%; 500v DCW; per spec JAN-C-5; JAN type CM30A332K | Low Pass Filter J-2153 Input, Unit 5 |
| C-2175 | N16-C-15561-7083 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 4 mmf ±0.25 mmf; 500v DCW; per spec JAN-C-20A; JAN type CC21UJ040C | Filter Coupling 1.1 mc Filter, Unit 5 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|---|
| C-2176 | | Same as C-2165; p/o Z-2156 | Filter Tuning Z-2156, Unit 5 |
| C-2177 | | Same as C-2175 | Filter Coupling 1.2 mc Filter, Unit 5 |
| C-2178 | | Same as C-2175 | Filter Coupling 1.2 mc Filter, Unit 5 |
| C-2179 | | Same as C-2159; p/o Z-2157 | Filter Tuning Z-2157, Unit 5 |
| C-2180 | | Same as C-2159; p/o Z-2157 | Filter Tuning Z-2157, Unit 5 |
| C-2181 | | Same as C-2002 | Cathode By-Pass V-2153, Unit 5 |
| C-2182 | | Same as C-2002 | RF By-Pass, Unit 5 |
| C-2183 thru C-2200 | | Not Used | |
| C-2201 | | Same as C-2031 | Input Coupling V-2201, Unit 6 |
| C-2202 | | Same as C-2001 | |
| C-2202A | | p/o C-2202 | B+ Filter, Unit 6 |
| C-2202B | | p/o C-2202 | B+ Filter, Unit 6 |
| C-2202C | | p/o C-2202 | B+ Filter, Unit 6 |
| C-2203 | | Same as C-2031 | Grid Coupling to V-2202, Unit 6 |
| C-2204 | For Replacement Use N16-C-30658-1603 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 750 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB11EA751G | Blocking Osc. Time, Unit 6 |
| C-2205 | | Same as C-2031 | Output Coupling to J-2202, Unit 6 |
| C-2206 | N16-C-54535-8505 | CAPACITOR, FIXED, PAPER DIELECTRIC: 3 sect; each section 0.25 mfd $+20\%$ - 10% ; 600v DCW; per spec JAN-C-25; JAN type CP69B5FF254V | |
| C-2206A | | p/o C-2206 | Screen By-Pass V-2203, Unit 6 |
| C-2206B | | p/o C-2206 | Cathode By-Pass V-2203, Unit 6 |
| C-2206C | | p/o C-2206 | Plate By-Pass V-2203, Unit 6 |
| C-2207 | | Same as C-2031 | Output Divider J-2202, Unit 6 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---|
| C-2208 | | Same as C-2031 | Low Pass Filter, Unit 6 |
| C-2209 | | Same as C-2003 | 10 kc Rejection Filter, Unit 6 |
| C-2210 | | Same as C-2037 | 10 kc Rejection Filter, Unit 6 |
| C-2211 | | Same as C-2003 | 10 kc Rejection Filter, Unit 6 |
| C-2212 | N16-C-64133-6581 | CAPACITOR, VARIABLE, CERAMIC DIELECTRIC: single section; slug tuned; 7 to 45 mmf; 500v DCW; per spec JAN-C-81; JAN type CV11C450 | 10 kc Rejection Filter Tuning, Unit 6 |
| C-2213 | | Same as C-2202 | Low Pass Filter, Unit 6 |
| C-2214 | N16-C-18782-8807 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: case style no. 2 MBCA Ref Dwg Group 1; 1500 mmf $\pm 10\%$; 500v DCW; temp coefficient variable; molded phenolic body, insulated; 0.250 in. diam by 0.812 in. lg o/a dimen; 2 axial wire type term; term mtg; impregnated w/microcrystalline wax; CER Hi-K Ceramicon GP2L1500 | Low Pass Filter, Unit 6 |
| C-2215 | For Replacement Use N16-C-15949-2028 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 12 mmf $\pm 5\%$; 500v DCW; per spec JAN-C-20A; JAN type CC21PH120J | Reactance Tube Phase Shift V-2204, Unit 6 |
| C-2216 | | Same as C-2003 | Grid Coupling V-2203, Unit 6 |
| C-2217 | | Same as C-2003 | Grid Coupling V-2205, Unit 6 |
| C-2218 | | Same as C-2204; p/o Z-2201 | Osc. Tank Z-2201, Unit 6 |
| C-2219 | N16-C-64062-6985 | CAPACITOR, VARIABLE, CERAMIC DIELECTRIC: single section; 4.5 to 30 mmf; 500v DCW; per spec JAN-C-81; JAN type CV11C300 | Osc. Tank Tuning, Unit 6 |
| C-2220 | For Replacement Use N16-C-30288-7965 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 560 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB11EA561G | Osc. Tank, Unit 6 |
| C-2221 | | Same as C-2002 | Screen By-Pass V-2204, Unit 6 |
| C-2222 | N16-C-16269-2583 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 30 mmf $\pm 2\%$; 500v DCW; per spec JAN-C-20A; JAN type CC21UJ300G | Output Coupling J-2203, Unit 6 |
| C-2223 | | Same as C-2003 | Plate Load V-2205, Unit 6 |
| C-2224 | | Same as C-2002 | Screen By-Pass V-2205, Unit 6 |
| C-2225 | | Same as C-2005 | Low Pass Filter, Unit 6 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--|
| C-2226 | | Same as C-2037 | Low Pass Filter, Unit 6 |
| C-2227 | | Same as C-2005 | Low Pass Filter, Unit 6 |
| C-2228 | | Same as C-2031 | Grid Coupling V-2206, Unit 6 |
| C-2229 | | Same as C-2001 | |
| C-2229A | | p/o C-2229 | B+ Filter, Unit 6 |
| C-2229B | | p/o C-2229 | Cathode By-Pass V-2206, Unit 6 |
| C-2229C | | p/o C-2229 | Screen By-Pass V-2206, Unit 6 |
| C-2230 | | Same as C-2039; p/o Z-2202 | (1. 21-1. 3) mc Main Filter Condenser, Unit 6 |
| C-2231 | N16-C-99999-178 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 3. 0 mmf ±0. 25 mmf; 500v DCW; per spec JAN-C-20A; JAN type CC21UJ030C | (1. 21-1. 3) mc Filter Coupling, Unit 6 |
| C-2232 | | Same as C-2031 | (1. 21-1. 3) mc Filter DC Blocking, Unit 6 |
| C-2233 | | Same as C-2031 | B+ Filter, Unit 6 |
| C-2234 | | Same as C-2039; p/o Z-2203 | (1. 21-1. 3) mc Main Filter Tuning Z-2203, Unit 6 |
| C-2235 | | Same as C-2102; p/o XV-2207 | Cathode By-Pass V02207, Unit 6 |
| C-2236 | | Same as C-2102; p/o XV-2207 | Screen By-Pass V-2207, Unit 6 |
| C-2237 | N16-C-16460-4151 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 43 mmf ±2%; 500v DCW; per spec JAN-C-20A; JAN type CC25LH430G | (10. 4-10. 5) mc Filter T-2203, Unit 6 |
| C-2238 | | Same as C-2237 | (10. 4-10. 5) mc Filter T-2203, Unit 6 |
| C-2239 | | Same as C-2237 | (10. 4-10. 5) mc Filter T-2203, Unit 6 |
| C-2240 | | Same as C-2102; p/o XV-2208 | Cathode By-Pass V-2208, Unit 6 |
| C-2241 | | Same as C-2102; p/o XV-2208 | Screen By-Pass V-2208, Unit 6 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--|
| C-2242 | | Same as C-2237 | (10. 4-10. 5) mc Filter T-2204, Unit 6 |
| C-2243 | | Same as C-2102; p/o XV-2209 | Cathode By-Pass V-2209, Unit 6 |
| C-2244 | | Same as C-2102; p/o XV-2209 | Screen By-Pass V-2209, Unit 6 |
| C-2245 | | Same as C-2237 | (10. 4-10. 5) mc Filter T-2205, Unit 6 |
| C-2246 | N16-C-16524-5777 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 47 mmf $\pm 2\%$; 500v DCW; per spec JAN-C-20A; JAN type CC26PH470G | (10. 4-10. 5) mc Filter T-2205, Unit 6 |
| C-2247 | | Same as C-2013 | Output Coupling J-2206, Unit 6 |
| C-2248 | | Same as C-2102; p/o XV-2207 | Fil. By-Pass V-2207, Unit 6 |
| C-2249 | | Same as C-2102; p/o XV-2208 | Fil. By-Pass V-2208, Unit 6 |
| C-2250 | | Same as C-2102; p/o XV-2209 | Fil. By-Pass V-2209, Unit 6 |
| C-2251 | For Replacement Use N16-C-27571-8744 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 47 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA470G | 1. 21 mc Filter Step S-2201C, Unit 6 |
| C-2252 | For Replacement Use N16-C-27366-1109 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 39 mmf $\pm 5\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA390J | 1. 22 mc Filter Step S-2201C, Unit 6 |
| C-2253 | For Replacement Use N16-C-27181-4308 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 33 mmf $\pm 5\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA330J | 1. 23 mc Filter Step S-2201C, Unit 6 |
| C-2254 | | Same as C-2253 | 1. 24 mc Filter Step S-2201C, Unit 6 |
| C-2255 | For Replacement Use N16-C-26838-5029 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 22 mmf $\pm 5\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA220J | 1. 25 mc Filter Step S-2201C, Unit 6 |
| C-2256 | For Replacement Use N16-C-99999-1171 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 15 mmf $\pm 10\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA150K | 1. 26 mc Filter Step S-2201C, Unit 6 |
| C-2257 | For Replacement Use N16-C-26025-8185 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 10 mmf $\pm 10\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA100K | 1. 27 mc Filter Step S-2201C, Unit 6 |
| C-2258 | For Replacement Use N16-C-25107-8491 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 5 mmf $\pm 20\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA050M | 1. 28 mc Filter Step S-2201C, Unit 6 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--|
| C-2259 | | Same as C-2251 | 1. 21 mc Filter Step S-2201B, Unit 6 |
| C-2260 | | Same as C-2252 | 1. 22 mc Filter Step S-2201B, Unit 6 |
| C-2261 | | Same as C-2253 | 1. 23 mc Filter Step S-2201B, Unit 6 |
| C-2262 | | Same as C-2253 | 1. 24 mc Filter Step S-2201B, Unit 6 |
| C-2263 | | Same as C-2255 | 1. 25 mc Filter Step S-2201B, Unit 6 |
| C-2264 | | Same as C-2256 | 1. 26 mc Filter Step S-2201B, Unit 6 |
| C-2265 | | Same as C-2257 | 1. 27 mc Filter Step S-2201B, Unit 6 |
| C-2266 | | Same as C-2258 | 28 mc Filter Step S-2201B, Unit 6 |
| C-2267 | N16-C-85702-3003 | CAPACITOR, VARIABLE, PLASTIC DIELECTRIC: rotary type tubular trimmer; 1.0 to 8.0 mmf; 500v DCW; 1-5/8 in. h at max capacity, 5/8 in. wd, 23/64 in. d o/a dimen excluding solder lug term; 2 term, one solder lug type, one term formed by mtg clip; screwdriver slot adjustment; cylindrical brass plunger; dielectric material molded polystyrene, brass base; for panel thickness 0.040 in. to 0.065 in.; CER style 532 | (1. 21-1. 3) mc Main Trimmer S-2201C, Unit 6 |
| C-2268 | | Same as C-2267 | 1. 21 mc Trimmer S-2201C, Unit 6 |
| C-2269 | | Same as C-2267 | 1. 22 mc Trimmer S-2201C, Unit 6 |
| C-2270 | | Same as C-2267 | 1. 23 mc Trimmer S-2201C, Unit 6 |
| C-2271 | | Same as C-2267 | 1. 24 mc Trimmer S-2201C, Unit 6 |
| C-2272 | | Same as C-2267 | 1. 25 mc Trimmer S-2201C, Unit 6 |
| C-2273 | | Same as C-2267 | 1. 26 mc Trimmer S-2201C, Unit 6 |
| C-2274 | | Same as C-2267 | 1. 27 mc Trimmer S-2201C, Unit 6 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|--|
| C-2275 | | Same as C-2267 | 1. 28 mc Trimmer S-2201C, Unit 6 |
| C-2276 | | Same as C-2267 | 1. 29 mc Trimmer S-2201C, Unit 6 |
| C-2277 | | Same as C-2267 | (1. 21-1. 3) mc Main Trimmer S-2201B, Unit 6 |
| C-2278 | | Same as C-2267 | 1. 21 mc Trimmer S-2201B, Unit 6 |
| C-2279 | | Same as C-2267 | 1. 22 mc Trimmer S-2201B, Unit 6 |
| C-2280 | | Same as C-2267 | 1. 23 mc Trimmer S-2201B, Unit 6 |
| C-2281 | | Same as C-2267 | 1. 24 mc Trimmer S-2201B, Unit 6 |
| C-2282 | | Same as C-2267 | 1. 25 mc Trimmer S-2201B, Unit 6 |
| C-2283 | | Same as C-2267 | 1. 26 mc Trimmer S-2201B, Unit 6 |
| C-2284 | | Same as C-2267 | 1. 27 mc Trimmer S-2201B, Unit 6 |
| C-2285 | | Same as C-2267 | 1. 28 mc Trimmer S-2201B, Unit 6 |
| C-2286 | | Same as C-2267 | 1. 29 mc Trimmer S-2201B, Unit 6 |
| C-2287 | For Replacement Use N16-C-16784-9269 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 68 mmf $\pm 2\%$; 500v DCW; per spec JAN-C-20A; JAN type CC32CG680G | Osc. Temp Compen- sation V-2205, Unit 6 |
| C-2288 | | Same as C-2222 | (1. 21-1. 3) mc Filter Temp Com- pensation Z-2202, Unit 6 |
| C-2289 | | Same as C-2222 | (1. 21-1. 3) mc Filter Temp Compensation, Unit 6 |
| C-2290 | | Same as C-2108 | Coupling, Unit 6 |
| C-2291 | N16-C-45801-9618 | CAPACITOR, FIXED, PAPER DIELECTRIC: 100,000 mmf $\pm 20\%$ -10%; 600v DCW; per spec JAN-C-25A; JAN type CP54B1EF104V | Cathode By-Pass V-2202, Unit 6 |
| C-2292 thru C-2300 | | Not Used | |
| C-2301 | | Same as C-2031 | Grid Coupling V-2301, Unit 7 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|-----------------------------|-----------------------------------|
| C-2302 | | Same as C-2102; p/o XV-2301 | Screen By-Pass V-2301, Unit 7 |
| C-2303 | | Same as C-2103; p/o Z-2301 | Filter Tuning Z-2301, Unit 7 |
| C-2304 | | Same as C-2103; p/o Z-2301 | Filter Tuning Z-2301, Unit 7 |
| C-2305 | | Same as C-2102; p/o XV-2302 | Screen By-Pass V-2302, Unit 7 |
| C-2306 | | Same as C-2102; p/o XV-2302 | Cathode By-Pass V-2302, Unit 7 |
| C-2307 | | Same as C-2103; p/o Z-2302 | Filter Tuning Z-2302, Unit 7 |
| C-2308 | | Same as C-2108 | Filter Tuning Z-2302, Unit 7 |
| C-2309 | | Same as C-2037 | Output Coupling J-2302, Unit 7 |
| C-2310 | | Same as C-2102; p/o XV-2301 | Fil. By-Pass V-2301, Unit 7 |
| C-2311 | | Same as C-2102; p/o XV-2302 | Fil. By-Pass V-2302, Unit 7 |
| C-2312 | | Same as C-2102; p/o XV-2303 | Fil. By-Pass V-2303, Unit 7 |
| C-2313 | | Same as C-2102; p/o XV-2304 | Fil. By-Pass V-2304, Unit 7 |
| C-2314 | | Same as C-2031 | B+ Filter, Unit 7 |
| C-2315 | | Same as C-2031 | Grid Coupling V-2303, Unit 7 |
| C-2316 | | Same as C-2102; p/o XV-2303 | Screen By-Pass V-2303, Unit 7 |
| C-2317 | | Same as C-2165; p/o Z-2303 | Filter Tuning Z-2303, Unit 7 |
| C-2318 | | Same as C-2165; p/o Z-2303 | Filter Tuning Z-2303, Unit 7 |
| C-2319 | | Same as C-2102; p/o XV-2304 | Cathode By-Pass V-2304, Unit 7 |
| C-2320 | | Same as C-2102; p/o XV-2304 | Screen By-Pass V-2304, Unit 7 |
| C-2321 | | Same as C-2165; p/o Z-2304 | Filter Tuning Z-2304, Unit 7 |
| C-2322 | | Same as C-2170 | Filter Tuning Z-2304, Unit 7 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---|
| C-2323 | | Same as C-2169 | Output Coupling J-2303, Unit 7 |
| C-2324 | | Not Used | |
| C-2325 | | Not Used | |
| C-2326 | | Same as C-2031 | Input Coupling V-2326, Unit 8 |
| C-2327 | | Same as C-2031 | Grid Coupling V-2326, Unit 8 |
| C-2328 | | Same as C-2001 | |
| C-2328A | | p/o C-2328 | B+ Filter, Unit 8 |
| C-2328B | | p/o C-2328 | B+ Filter, Unit 8 |
| C-2328C | | p/o C-2328 | B+ Filter, Unit 8 |
| C-2329 | | Same as C-2002 | Cathode By-Pass V-2327, Unit 8 |
| C-2330 | | Same as C-2002 | Screen By-Pass V-2327, Unit 8 |
| C-2331 | For Replacement Use N16-C-28547-8635 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 100 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA101G | Low Pass Filter, Unit 8 |
| C-2332 | | Same as C-2103 | 100 kc Rejection Filter, Unit 8 |
| C-2333 | | Same as C-2331 | 100 kc Rejection Filter, Unit 8 |
| C-2334 | | Same as C-2103 | 100 kc Rejection Filter, Unit 8 |
| C-2335 | N16-C-63965-2800 | CAPACITOR, VARIABLE, CERAMIC DIELECTRIC: single section, slug-tuned, 3 to 13 mmf; 500v DCW; per spec JAN-C-81; JAN type CV11B130 | 100 kc Rejection Filter, Unit 8 |
| C-2336 | | Same as C-2003 | Low Pass Filter, Unit 8 |
| C-2337 | N16-C-99999-211 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 2 mmf ± 0.25 mmf; 500v DCW; per spec JAN-C-20A; JAN type CC21PK020C | Reactance Tube Phase Shift V-2328, Unit 8 |
| C-2338 | | Same as C-2102; p/o XV-2328 | Screen By-Pass V-2328, Unit 8 |
| C-2339 | | Same as C-2335 | Osc. Tank Trimmer, Unit 8 |
| C-2340 | | Same as C-2012; p/o Z-2326 | Osc. Tank, Unit 8 |
| C-2341 | For Replacement Use N16-C-28125-8192 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 75 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB11EA750G | Osc. Tank, Unit 8 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|---|
| C-2342 | | Same as C-2103 | Osc. Coupling V-2329, Unit 8 |
| C-2343 | | Same as C-2103 | Mixer Coupling V-2329, Unit 8 |
| C-2344 | N16-C-15528-5533 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 3 mmf ± 0.25 mmf; 500v DCW; per spec JAN-C-20A; JAN type CC21CJ030C | Grid Coupling V-2334, Unit 8 |
| C-2345 | N16-C-16236-6426 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 27 mmf $\pm 2\%$; 500v DCW; per spec JAN-C-20A; JAN type CC21RH270G | Osc. Plate Load V-2329, Unit 8 |
| C-2346 | | Same as C-2102; p/o XV-2329 | Screen By-Pass V-2329, Unit 8 |
| C-2347 | For Replacement Use N16-C-27651-1012 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 51 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA510G | Low Pass Filter, Unit 8 |
| C-2348 | N16-C-29075-4924 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 160 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA161G; same as C-2058A | Low Pass Filter, Unit 8 |
| C-2349 | | Same as C-2347 | Low Pass Filter, Unit 8 |
| C-2350 | | Same as C-2102; p/o XV-2330 | Cathode By-Pass V-2330, Unit 8 |
| C-2351 | | Same as C-2102; p/o XV-2330 | Screen By-Pass V-2330, Unit 8 |
| C-2352 | | Same as C-2002 | Screen By-Pass V-2328, Unit 8 |
| C-2353 | | Same as C-2237 | (16.6-17.5) mc Filter Tuning L-2338, Unit 8 |
| C-2354 | | Same as C-2031 | DC Isolating, Unit 8 |
| C-2355 | N16-C-15369-4394 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1.0 mmf ± 0.25 mmf; 500v DCW; per spec JAN-C-20A; JAN type CC21SK010C | Filter Coupling, Unit 8 |
| C-2356 | | Same as C-2337 | Filter Tuning S-2326F, Unit 8 |
| C-2357 | | Same as C-2237 | (16.6-17.5) mc Filter Tuning L-2339, Unit 8 |
| C-2358 | | Same as C-2344 | 16.6 mc Filter Tuning S-2326F, Unit 8 |
| C-2359 | | Same as C-2344 | 16.7 mc Filter Tuning S-2326F, Unit 8 |
| C-2360 | | Same as C-2344 | 16.6 mc Filter Tuning S-2326E, Unit 8 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|----------------------|--|
| C-2361 | | Same as C-2344 | 16.7 mc Filter Tuning S-2326E, Unit 8 |
| C-2362 | | Same as C-2267 | 16.6 mc Filter Trimmer S-2326F, Unit 8 |
| C-2363 | | Same as C-2267 | 16.7 mc Filter Trimmer S-2326F, Unit 8 |
| C-2364 | | Same as C-2267 | 16.8 mc Filter Trimmer S-2326F, Unit 8 |
| C-2365 | | Same as C-2267 | 16.9 mc Filter Trimmer S-2326F, Unit 8 |
| C-2366 | | Same as C-2267 | 17.0 mc Filter Trimmer S-2326F, Unit 8 |
| C-2367 | | Same as C-2267 | 17.1 mc Filter Trimmer S-2326F, Unit 8 |
| C-2368 | | Same as C-2267 | 17.2 mc Filter Trimmer S-2326F, Unit 8 |
| C-2369 | | Same as C-2267 | 17.3 mc Filter Trimmer S-2326F, Unit 8 |
| C-2370 | | Same as C-2267 | 17.4 mc Filter Trimmer S-2326F Unit 8 |
| C-2371 | | Same as C-2267 | 16.6 mc Filter Trimmer S-2326E, Unit 8 |
| C-2372 | | Same as C-2267 | 16.7 mc Filter Trimmer S-2326E, Unit 8 |
| C-2373 | | Same as C-2267 | 16.8 mc Filter Trimmer S-2326E, Unit 8 |
| C-2374 | | Same as C-2267 | 16.9 mc Filter Trimmer S-2326E, Unit 8 |
| C-2375 | | Same as C-2267 | 17.0 mc Filter Trimmer S-2326E, Unit 8 |
| C-2376 | | Same as C-2267 | 17.1 mc Filter Trimmer S-2326E, Unit 8 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|---|
| C-2377 | | Same as C-2267 | 17. 2 mc Filter Trimmer S-2326E, Unit 8 |
| C-2378 | | Same as C-2267 | 17. 3 mc Filter Trimmer S-2326E, Unit 8 |
| C-2379 | | Same as C-2267 | 17. 4 mc Filter Trimmer S-2326E, Unit 8 |
| C-2380 | | Same as C-2102; p/o XV-2331 | Cathode By-Pass V-2331, Unit 8 |
| C-2381 | | Same as C-2102; p/o XV-2331 | Screen By-Pass V-2331, Unit 8 |
| C-2382 | | Same as C-2031 | B+ By-Pass, Unit 8 |
| C-2383 | For Replacement Use N16-C-27181-4272 | CAPACITOR, FIXED, BUTON, MICA DIELECTRIC: 33 mmf ±5%; 500v DCW; per BuShips 16C41; NAVY type CB11EA330J; p/o Z-2327 | (27-28) mc Filter Z-2327, Unit 8 |
| C-2384 | | Same as C-2383; p/o Z-2327 | (27-28) mc Filter Z-2327, Unit 8 |
| C-2385 | | Same as C-2102; p/o XV-2332 | Cathode By-Pass V-2332, Unit 8 |
| C-2386 | | Same as C-2102; p/o XV-2332 | Screen By-Pass V-2332, Unit 8 |
| C-2387 | | Same as C-2383; p/o Z-2328 | (27-28) mc Filter Z-2328, Unit 8 |
| C-2388 | | Same as C-2383; p/o Z-2328 | (27-28) mc Filter Z-2328, Unit 8 |
| C-2389 | | Same as C-2102; p/o XV-2333 | Cathode By-Pass V-2333, Unit 8 |
| C-2390 | | Same as C-2102; p/o XV-2333 | Screen By-Pass V-2333, Unit 8 |
| C-2391 | | Same as C-2383; p/o Z-2329 | (27-28) mc Filter Z-2329, Unit 8 |
| C-2392 | | Same as C-2237 | (27-28) mc Filter Z-2329, Unit 8 |
| C-2393 | For Replacement Use N16-C-29602-9629 | CAPACITOR, FIXED, BUTON, MICA DIELECTRIC: 270 mmf ±2%; 500v DCW; per BuShips 16C41; NAVY type CB20EA271G | Output Coupling J-2330, Unit 8 |
| C-2394 | | Same as C-2102; p/o XV-2330 | Fil. By-Pass V-2330, Unit 8 |
| C-2395 | | Same as C-2102; p/o XV-2331 | Fil. By-Pass V-2331, Unit 8 |
| C-2396 | | Same as C-2102; p/o XV-2332 | Fil. By-Pass V-2332, Unit 8 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|--------------------------------------|
| C-2397 | | Same as C-2102; p/o XV-2333 | Fil. By-Pass V-2333, Unit 8 |
| C-2398 | | Same as C-2102; p/o XV-2328 | Fil. By-Pass V-2328, Unit 8 |
| C-2399 | | Same as C-2102; p/o XV-2329 | Fil. By-Pass V-2329, Unit 8 |
| C-2400 | | Same as C-2102; p/o XV-2328 | Cathode By-Pass V-2328, Unit 8 |
| C-2401 | | Same as C-2102; p/o XV-2327 | Cathode By-Pass V-2327, Unit 8 |
| C-2402 | | Same as C-2102; p/o XV-2327 | Screen By-Pass V-2327, Unit 8 |
| C-2403 | | Same as C-2102; p/o XV-2327 | Fil. By-Pass V-2327, Unit 8 |
| C-2404 | | Same as C-2337 | Filter Tuning, Unit 8 |
| C-2405 | | Same as C-2267 | Main Trimmer, Unit 8 |
| C-2406 | | Same as C-2267 | Main Trimmer, Unit 8 |
| C-2407 | | Same as C-2031 | Output Coupling J-2327, Unit 8 |
| C-2408 | | Same as C-2102; p/o XV-2334 | Plate By-Pass V-2334, Unit 8 |
| C-2409 | | Same as C-2102; p/o XV-2334 | Fil. By-Pass V-2334, Unit 8 |
| C-2410 | N16-C-16076-9703 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 20 mmf $\pm 2\%$; 500v DCW; per spec JAN-C-20A; JAN type CC21TH200G | Osc. Tank Z-2326, Unit 8 |
| C-2411 thru C-2425 | | Not Used | |
| C-2426 | For Replacement Use N16-C-26210-4971 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 12 mmf $\pm 10\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA120K | (27-28) mc Tuning S-2426C, Unit 9 |
| C-2427 | For Replacement Use N16-C-26917-4298 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 24 mmf $\pm 5\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA240J | (32-33) mc Tuning S-2426C, Unit 9 |
| C-2428 | For Replacement Use N16-C-27286-8770 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 36 mmf $\pm 5\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA360J | (37-38) mc Tuning S-2426C, Unit 9 |
| C-2429 | | Same as C-2102; p/o XV-2426 | Cathode By-Pass V-2426, Unit 9 |
| C-2430 | N16-C-99999-179 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 24 mmf $\pm 2\%$; 500v DCW; per spec JAN-C-20A; JAN type CC21PH240G | Main Tuning S-2426C, Unit 9 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|---------------------|---|-----------------------------|---------------------------------------|
| C-2431 | | Same as C-2267 | Main Trimmer S-2426C, Unit 9 |
| C-2432 | | Same as C-2267 | 100 kc Step Tuning S-2427C, Unit 9 |
| C-2433 | | Same as C-2267 | 100 kc Step Tuning S-2427C, Unit 9 |
| C-2434 | | Same as C-2267 | 100 kc Step Tuning S-2427C, Unit 9 |
| C-2435 | | Same as C-2267 | 100 kc Step Tuning S-2427C, Unit 9 |
| C-2436 | | Same as C-2267 | 100 kc Step Tuning S-2427C, Unit 9 |
| C-2437 | | Same as C-2267 | 100 kc Step Tuning S-2427C, Unit 9 |
| C-2438 | | Same as C-2267 | 100 kc Step Tuning S-2427C, Unit 9 |
| C-2439 | | Same as C-2267 | 100 kc Step Tuning S-2427C, Unit 9 |
| C-2440 | | Same as C-2267 | 100 kc Step Tuning S-2427C, Unit 9 |
| C-2441 | | Same as C-2337 | 100 kc Step Tuning S-2427C, Unit 9 |
| C-2442 | | Same as C-2426 | (27-28) mc Tuning S-2426D, Unit 9 |
| C-2443 | | Same as C-2427 | (32-33) mc Tuning S-2426D, Unit 9 |
| C-2444 | | Same as C-2428 | (37-38) mc Tuning S-2426D, Unit 9 |
| C-2445 | | Same as C-2102; p/o XV-2426 | Screen By-Pass V-2427, Unit 9 |
| C-2446 | | Same as C-2430 | Main Tuning S-2426D, Unit 9 |
| C-2447 | | Same as C-2267 | Main Trimmer S-2427D, Unit 9 |
| C-2448 | | Same as C-2267 | 100 kc Step Tuning S-2427D, Unit 9 |
| C-2449 | | Same as C-2267 | 100 kc Step Tuning S-2427D, Unit 9 |
| C-2450 | | Same as C-2267 | 100 kc Step Tuning S-2427D, Unit 9 |
| C-2451 | | Same as C-2267 | 100 kc Step Tuning S-2427D, Unit 9 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---|
| C-2452 | | Same as C-2267 | 100 kc Step Tuning S-2427D, Unit 9 |
| C-2453 | | Same as C-2267 | 100 kc Step Tuning S-2427D, Unit 9 |
| C-2454 | | Same as C-2267 | 100 kc Step Tuning S-2427D, Unit 9 |
| C-2455 | | Same as C-2267 | 100 kc Step Tuning S-2427D, Unit 9 |
| C-2456 | | Same as C-2267 | 100 kc Step Tuning S-2427D, Unit 9 |
| C-2457 | | Same as C-2337 | 100 kc Step Tuning S-2427D, Unit 9 |
| C-2458 | | Same as C-2426 | (27-28) mc Tuning S-2426E, Unit 9 |
| C-2459 | | Same as C-2427 | (32-33) mc Tuning S-2426E, Unit 9 |
| C-2460 | | Same as C-2428 | (37-38) mc Tuning S-2426E, Unit 9 |
| C-2461 | N16-C-17919-1869 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500v DCW; 330 mmf $\pm 10\%$; 30 mmf/mf/ $^{\circ}$ C negative temp coefficient; ± 30 mmf/mf/ $^{\circ}$ C tolerance; style no. 25K Ref Dwg Group 1; insulated body, 0.250 in. diam, 0.562 in. lg o/a dimen; schematic diagram 1-R Ref Dwg Group 1; mtg facilities not incl; CER Hi-K Ceramicon GP2K330 | Grid Coupling V-2427, Unit 9 |
| C-2462 | | Same as C-2430 | Main Tuning S-2426E, Unit 9 |
| C-2463 | | Same as C-2267 | Main Trimmer S-2426E, Unit 9 |
| C-2464 | | Same as C-2267 | 100 kc Step Trimmer S-2427E, Unit 9 |
| C-2465 | | Same as C-2267 | 100 kc Step Trimmer S-2427E, Unit 9 |
| C-2466 | | Same as C-2267 | 100 kc Step Trimmer S-2427E, Unit 9 |
| C-2467 | | Same as C-2267 | 100 kc Step Trimmer S-2427E, Unit 9 |
| C-2468 | | Same as C-2267 | 100 kc Step Trimmer S-2427E, Unit 9 |
| C-2469 | | Same as C-2267 | 100 kc Step Trimmer S-2427E, Unit 9 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|-----------------------------|---|
| C-2470 | | Same as C-2267 | 100 kc Step Trimmer S-2427E, Unit 9 |
| C-2471 | | Same as C-2267 | 100 kc Step Trimmer S-2427E, Unit 9 |
| C-2472 | | Same as C-2267 | 100 kc Step Trimmer S-2427E, Unit 9 |
| C-2473 | | Same as C-2337 | 100 kc Step Trimmer S-2427E, Unit 9 |
| C-2474 | | Same as C-2426 | (27-28) mc Tuning S-2426F, Unit 9 |
| C-2475 | | Same as C-2427 | (32-33) mc Tuning S-2426F, Unit 9 |
| C-2476 | | Same as C-2428 | (37-38) mc Tuning S-2426F, Unit 9 |
| C-2477 | | Same as C-2461 | Grid Coupling V-2428, Unit 9 |
| C-2478 | | Same as C-2267 | Main Trimmer S-2426F, Unit 9 |
| C-2479 | | Same as C-2267 | 100 kc Step Tuning S-2427F, Unit 9 |
| C-2480 | | Same as C-2267 | 100 kc Step Tuning S-2427F, Unit 9 |
| C-2481 | | Same as C-2267 | 100 kc Step Tuning S-2427F, Unit 9 |
| C-2482 | | Same as C-2267 | 100 kc Step Tuning S-2427F, Unit 9 |
| C-2483 | | Same as C-2267 | 100 kc Step Tuning S-2427F, Unit 9 |
| C-2484 | | Same as C-2267 | 100 kc Step Tuning S-2427F, Unit 9 |
| C-2485 | | Same as C-2267 | 100 kc Step Tuning S-2427F, Unit 9 |
| C-2486 | | Same as C-2267 | 100 kc Step Tuning S-2427F, Unit 9 |
| C-2487 | | Same as C-2267 | 100 kc Step Tuning S-2427F, Unit 9 |
| C-2488 | | Same as C-2337 | 100 kc Step Tuning S-2427F, Unit 9 |
| C-2489 | | Same as C-2102; p/o XV-2427 | Cathode By-Pass V-2427, Unit 9 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---|
| C-2490 | | Same as C-2102; p/o XV-2427 | Screen By-Pass V-2427, Unit 9 |
| C-2491 | | Same as C-2102; p/o XV-2428 | Cathode By-Pass V-2428, Unit 9 |
| C-2492 | | Same as C-2102; p/o XV-2428 | Screen By-Pass V-2428, Unit 9 |
| C-2493 | | Same as C-2461 | Grid Coupling V-2429, Unit 9 |
| C-2494 | | Same as C-2102; p/o XV-2429 | Cathode By-Pass V-2429, Unit 9 |
| C-2495 | | Same as C-2102; p/o XV-2429 | Screen By-Pass V-2429, Unit 9 |
| C-2496 | | Same as C-2461 | DC Blocking V-2429, Unit 9 |
| C-2497 | | Same as C-2430 | Main Tuning J-2428, Unit 9 |
| C-2498 | For Replacement Use N16-C-29655-7347 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 300 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA301G | Output Coupling J-2428, Unit 9 |
| C-2499 | | Same as C-2031 | B+ Filter, Unit 9 |
| C-2500 | | Same as C-2031 | B+ Filter, Unit 9 |
| C-2501 | | Same as C-2031 | B+ Filter, Unit 9 |
| C-2502 | | Same as C-2102; p/o XV-2426 | Fil. By-Pass V-2426, Unit 9 |
| C-2503 | | Same as C-2102; p/o XV-2427 | Fil. By-Pass V-2427, Unit 9 |
| C-2504 | | Same as C-2102; p/o XV-2428 | Fil. By-Pass V-2428, Unit 9 |
| C-2505 | | Same as C-2102; p/o XV-2429 | Fil. By-Pass V-2429, Unit 9 |
| C-2506 | | Same as C-2258 | 100 kc Step Filter Tuning S-2427C, Unit 9 |
| C-2507 | | Same as C-2258 | 100 kc Step Filter Tuning S-2427D, Unit 9 |
| C-2508 | | Same as C-2258 | 100 kc Step Filter Tuning S-2427E, Unit 9 |
| C-2509 | | Same as C-2258 | 100 kc Step Filter Tuning S-2427F, Unit 9 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|---|
| C-2510 thru C-2525 | | Not Used | |
| C-2526 | | Same as C-2331 | Low Pass Filter, Unit 10 |
| C-2527 | | Same as C-2331 | Filter Tuning S-2526E, Unit 10 |
| C-2528 | | Same as C-2331 | Filter Tuning S-2526D, Unit 10 |
| C-2529 | | Same as C-2331 | Filter Tuning S-2526C, Unit 10 |
| C-2530 | | Same as C-2461 | Grid Coupling V-2427, Unit 10 |
| C-2531 | | Same as C-2102; p/o XV-2526 | Screen By-Pass V-2526, Unit 10 |
| C-2532 | | Same as C-2461 | Grid Coupling V-2527, Unit 10 |
| C-2533 | | Same as C-2102; p/o XV-2527 | Screen By-Pass V-2527, Unit 10 |
| C-2534 | | Same as C-2461 | Grid Coupling V-2528, Unit 10 |
| C-2535 | | Same as C-2102; p/o XV-2528 | Cathode By-Pass V-2528, Unit 10 |
| C-2536 | | Same as C-2102, p/o XV-2528 | Screen By-Pass V-2528, Unit 10 |
| C-2537 | N16-C-99999-177 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1.0 mmf ±0.25 mmf; 500v DCW; per spec JAN-C-20A; JAN type CC21PK010C | Filter Coupling V-2529, Unit 10 |
| C-2538 | | Same as C-2102; p/o XV-2529 | Cathode By-Pass V-2529, Unit 10 |
| C-2539 | | Same as C-2102; p/o XV-2529 | Screen By-Pass V-2529, Unit 10 |
| C-2540 | | Same as C-2461 | DC Blocking V-2529, Unit 10 |
| C-2541 | | Same as C-2537 | Filter Coupling, Unit 10 |
| C-2542 | | Same as C-2108 | Filter Tuning, Unit 10 |
| C-2543 | | Same as C-2037 | Cathode Follower Coupling V-2033, Unit 10 |
| C-2544 | | Same as C-2102; p/o XV-2526 | Fil. By-Pass V-2526, Unit 10 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|-------------------------------------|
| C-2545 | | Same as C-2102; p/o XV-2527 | Fil. By-Pass V-2527, Unit 10 |
| C-2546 | | Same as C-2102; p/o XV-2528 | Fil. By-Pass V-2528, Unit 10 |
| C-2547 | | Same as C-2102; p/o XV-2529 | Fil. By-Pass V-2529, Unit 10 |
| C-2548 | | Same as C-2031 | B+ Filter, Unit 10 |
| C-2549 | | Same as C-2031 | B+ Filter, Unit 10 |
| C-2550 | | Same as C-2461 | DC Blocking V-2528, Unit 10 |
| C-2551 thru C-2625 | | Not Used | |
| C-2626 | | Same as C-2001 | |
| C-2626A | | p/o C-2626 | Cathode By-Pass V-2626, Unit 11A |
| C-2626B | | p/o C-2626 | Screen By-Pass V-2626, Unit 11A |
| C-2626C | | p/o C-2626 | Cathode By-Pass V-2627, Unit 11A |
| C-2627 | | Same as C-2102; p/o XV-2626 | Cathode By-Pass V-2626, Unit 11A |
| C-2628 | | Same as C-2102; p/o XV-2626 | Screen By-Pass V-2626, Unit 11A |
| C-2629 | | Same as C-2001 | |
| C-2629A | | p/o C-2629 | Screen By-Pass V-2627, Unit 11A |
| C-2629B | | p/o C-2629 | Cathode By-Pass V-2628, Unit 11A |
| C-2629C | | p/o C-2629 | Screen By-Pass V-2628, Unit 11A |
| C-2630 | | Same as C-2108 | Grid Coupling, Unit 11A |
| C-2631 | N16-C-15980-4450 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 15 mmf $\pm 2\%$; 500v DCW; per spec JAN-C-20A; JAN type CC21LH150G | Low Pass Filter V-2626, Unit 11A |
| C-2632 | | Same as C-2001 | |
| C-2632A | | p/o C-2632 | B+ Filter, Unit 11A |
| C-2632B | | p/o C-2632 | B+ Filter, Unit 11A |
| C-2632C | | p/o C-2632 | B+ Filter, Unit 11A |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|--|
| C-2633 | | Same as C-2102; p/o XV-2627 | Screen By-Pass V-2627, Unit 11A |
| C-2634 | | Same as C-2102; p/o XV-2626 | Fil. By-Pass V-2626, Unit 11A |
| C-2635 | | Same as C-2108 | Grid Coupling V-2628, Unit 11A |
| C-2636 | | Same as C-2102; p/o XV-2628 | Cathode By-Pass V-2628, Unit 11A |
| C-2637 | | Same as C-2102; p/o XV-2627 | Fil. By-Pass V-2627, Unit 11A |
| C-2638 | | Same as C-2102; p/o XV-2628 | Screen By-Pass V-2628, Unit 11A |
| C-2639 | | Same as C-2102; p/o XV-2628 | Fil. By-Pass V-2628, Unit 11A |
| C-2640 | | Same as C-2031 | Grid Coupling V-2629, Unit 11A |
| C-2641 | | Same as C-2631 | Low Pass Filter V-2626, Unit 11A |
| C-2642 | | Same as C-2002 | Output Coupling J-2628, Unit 11A |
| C-2643 | | Same as C-2102; p/o XV-2627 | Cathode By-Pass V-2627, Unit 11A |
| C-2644 | N16-C-99999-1176 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500v DCW; 5000 mmf, +100%-0%; style no. 19K Ref Dwg Group 1; insulated body, 19/32 in. diam, 1/16 in. lg o/a dimen; schematic diagram no. 1-R Ref Dwg Group 1; mtg facilities not incl; CER Hi-K type 811 | Keying Voltage By-Pass, Unit 11A |
| C-2645 | | Same as C-2644 | Grid Blocking V-2626, Unit 11A |
| C-2646 thru C-2650 | | Not Used | |
| C-2651 | | Same as C-2252 | (10-11) mc Tuning S-2651C, Unit 11B |
| C-2652 | | Same as C-2347 | (11-12) mc Tuning S-2651C, Unit 11B |
| C-2653 | For Replacement Use N16-C-27835-4801 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 62 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA620G | (12-13) mc Tuning S-2651C, Unit 11B |
| C-2654 | N16-C-27993-9241 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 68 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA680G | (13-14) mc Tuning S-2651C, Unit 11B |
| C-2655 | N16-C-28204-9442 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 82 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA820G | (14-15) mc Tuning S-2651C, Unit 11B |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|---|
| C-2656 | For Replacement Use N16-C-28389-5813 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 91 mmf $\pm 2\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA910G | (15-16) mc Tuning S-2651C, Unit 11B |
| C-2657 | | Same as C-2257 | (7-8) mc Tuning S-2651C, Unit 11B |
| C-2658 | For Replacement Use N16-C-26732-9419 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 20 mmf $\pm 5\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA200J | (8-9) mc Tuning S-2651C, Unit 11B |
| C-2659 | | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 30 mmf $\pm 5\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA300J | (9-10) mc Tuning S-2651C, Unit 11B |
| C-2660 | | Same as C-2267 | Main Filter Trimmer S-2651C, Unit 11B |
| C-2661 | | Same as C-2430 | Main Filter Trimmer S-2651C, Unit 11B |
| C-2662 | | Same as C-2267 | 100 kc Step Tuning S-2652B, Unit 11B |
| C-2663 | | Same as C-2256 | 100 kc Step Tuning S-2652B, Unit 11B |
| C-2664 | | Same as C-2267 | 100 kc Step Tuning S-2652B, Unit 11B |
| C-2665 | | Same as C-2256 | 100 kc Step Tuning S-2652B, Unit 11B |
| C-2666 | | Same as C-2267 | 100 kc Step Tuning S-2652B, Unit 11B |
| C-2667 | | Same as C-2426 | 100 kc Step Tuning S-2652B, Unit 11B |
| C-2668 | | Same as C-2267 | 100 kc Step Tuning S-2652B, Unit 11B |
| C-2669 | | Same as C-2257 | 100 kc Step Tuning S-2652B, Unit 11B |
| C-2670 | | Same as C-2267 | 100 kc Step Tuning S-2652B, Unit 11B |
| C-2671 | | Same as C-2258 | 100 kc Step Tuning S-2652B, Unit 11B |
| C-2672 | | Same as C-2267 | 100 kc Step Tuning S-2652B, Unit 11B |
| C-2673 | | Same as C-2258 | 100 kc Step Tuning S-2652B, Unit 11B |
| C-2674 | | Same as C-2267 | 100 kc Step Tuning S-2652B, Unit 11B |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|----------------------|---|
| C-2675 | | Same as C-2267 | 100 kc Step Tuning S-2652B, Unit 11B |
| C-2676 | | Same as C-2267 | 100 kc Step Tuning S-2652C, Unit 11B |
| C-2677 | | Same as C-2267 | 100 kc Step Tuning S-2652C, Unit 11B |
| C-2678 | | Same as C-2252 | (10-11) mc Tuning S-2651D, Unit 11B |
| C-2679 | | Same as C-2347 | (11-12) mc Tuning S-2651D, Unit 11B |
| C-2680 | | Same as C-2653 | (12-13) mc Tuning S-2651D, Unit 11B |
| C-2681 | | Same as C-2654 | (13-14) mc Tuning S-2651D, Unit 11B |
| C-2682 | | Same as C-2655 | (14-15) mc Tuning S-2651D, Unit 11B |
| C-2683 | | Same as C-2656 | (15-16) mc Tuning S-2651D, Unit 11B |
| C-2684 | | Same as C-2257 | (7-8) mc Tuning S-2651D, Unit 11B |
| C-2685 | | Same as C-2658 | (8-9) mc Tuning S-2651D, Unit 11B |
| C-2686 | | Same as C-2659 | (9-10) mc Tuning S-2651D, Unit 11B |
| C-2687 | | Same as C-2267 | Main Trimmer S-2651D, Unit 11B |
| C-2688 | | Same as C-2430 | Main Filter Tuning S-2651D, Unit 11B |
| C-2689 | | Same as C-2267 | 100 kc Step Tuning S-2652C, Unit 11B |
| C-2690 | | Same as C-2256 | 100 kc Step Tuning S-2652C, Unit 11B |
| C-2691 | | Same as C-2267 | 100 kc Step Tuning S-2652C, Unit 11B |
| C-2692 | | Same as C-2256 | 100 kc Step Tuning S-2652C, Unit 11B |
| C-2693 | | Same as C-2267 | 100 kc Step Tuning S-2652C, Unit 11B |
| C-2694 | | Same as C-2426 | 100 kc Step Tuning S-2652C, Unit 11B |
| C-2695 | | Same as C-2267 | 100 kc Step Tuning S-2652C, Unit 11B |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|----------------------|---|
| C-2696 | | Same as C-2257 | 100 kc Step Tuning S-2652C, Unit 11B |
| C-2697 | | Same as C-2267 | 100 kc Step Tuning S-2652C, Unit 11B |
| C-2698 | | Same as C-2258 | 100 kc Step Tuning S-2652C, Unit 11B |
| C-2699 | | Same as C-2267 | 100 kc Step Tuning S-2652C, Unit 11B |
| C-2700 | | Same as C-2258 | 100 kc Step Tuning S-2652C, Unit 11B |
| C-2701 | | Same as C-2252 | (10-11) mc Tuning S-2651E, Unit 11B |
| C-2702 | | Same as C-2347 | (11-12) mc Tuning S-2651E, Unit 11B |
| C-2703 | | Same as C-2653 | (12-13) mc Tuning S-2651E, Unit 11B |
| C-2704 | | Same as C-2654 | (13-14) mc Tuning S-2651E, Unit 11B |
| C-2705 | | Same as C-2655 | (14-15) mc Tuning S-2651E, Unit 11B |
| C-2706 | | Same as C-2656 | (15-16) mc Tuning S-2651E, Unit 11B |
| C-2707 | | Same as C-2257 | (7-8) mc Tuning S-2651E, Unit 11B |
| C-2708 | | Same as C-2658 | (8-9) mc Tuning S-2651E, Unit 11B |
| C-2709 | | Same as C-2659 | (9-10) mc Tuning S-2651E, Unit 11B |
| C-2710 | | Same as C-2267 | Main Trimmer S-2651E, Unit 11B |
| C-2711 | | Same as C-2430 | Main Filter Tuning S-2651E, Unit 11B |
| C-2712 | | Same as C-2267 | 100 kc Step Tuning S-2652D, Unit 11B |
| C-2713 | | Same as C-2256 | 100 kc Step Tuning S-2652D, Unit 11B |
| C-2714 | | Same as C-2267 | 100 kc Step Tuning S-2652D, Unit 11B |
| C-2715 | | Same as C-2256 | 100 kc Step Tuning S-2652D, Unit 11B |
| C-2716 | | Same as C-2267 | 100 kc Step Tuning S-2652D, Unit 11B |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|----------------------|---|
| C-2717 | | Same as C-2426 | 100 kc Step Tuning S-2625D, Unit 11B |
| C-2718 | | Same as C-2267 | 100 kc Step Tuning S-2652D, Unit 11B |
| C-2719 | | Same as C-2257 | 100 kc Step Tuning S-2652D, Unit 11B |
| C-2720 | | Same as C-2267 | 100 kc Step Tuning S-2652D, Unit 11B |
| C-2721 | | Same as C-2258 | 100 kc Step Tuning S-2652D, Unit 11B |
| C-2722 | | Same as C-2267 | 100 kc Step Tuning S-2652D, Unit 11B |
| C-2723 | | Same as C-2258 | 100 kc Step Tuning S-2652D, Unit 11B |
| C-2724 | | Same as C-2267 | 100 kc Step Tuning S-2652D, Unit 11B |
| C-2725 | | Same as C-2267 | 100 kc Step Tuning S-2652D, Unit 11B |
| C-2726 | | Same as C-2267 | 100 kc Step Tuning S-2652D, Unit 11B |
| C-2727 | | Same as C-2267 | 100 kc Step Tuning S-2652C, Unit 11B |
| C-2728 | | Same as C-2252 | (10-11) mc Tuning S-2651F, Unit 11B |
| C-2729 | | Same as C-2347 | (11-12) mc Tuning S-2651F, Unit 11B |
| C-2730 | | Same as C-2653 | (12-13) mc Tuning S-2651F, Unit 11B |
| C-2731 | | Same as C-2654 | (13-14) mc Tuning S-2651F, Unit 11B |
| C-2732 | | Same as C-2655 | (14-15) mc Tuning S-2651F, Unit 11B |
| C-2733 | | Same as C-2656 | (15-16) mc Tuning S-2651F, Unit 11B |
| C-2734 | | Same as C-2257 | (7-8) mc Tuning S-2651F, Unit 11B |
| C-2735 | | Same as C-2658 | (8-9) mc Tuning S-2651F, Unit 11B |
| C-2736 | | Same as C-2659 | (9-10) mc Tuning S-2651F, Unit 11B |
| C-2737 | | Same as C-2267 | Main Trimmer S-2651F, Unit 11B |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|-----------------------------|---|
| C-2738 | | Same as C-2267 | 100 kc Step Tuning S-2652E, Unit 11B |
| C-2739 | | Same as C-2256 | 100 kc Step Tuning S-2652E, Unit 11B |
| C-2740 | | Same as C-2267 | 100 kc Step Tuning S-2652E, Unit 11B |
| C-2741 | | Same as C-2256 | 100 kc Step Tuning S-2652E, Unit 11B |
| C-2742 | | Same as C-2267 | 100 kc Step Tuning S-2652E, Unit 11B |
| C-2743 | | Same as C-2426 | 100 kc Step Tuning S-2652E, Unit 11B |
| C-2744 | | Same as C-2267 | 100 kc Step Tuning S-2652E, Unit 11B |
| C-2745 | | Same as C-2257 | 100 kc Step Tuning S-2652E, Unit 11B |
| C-2746 | | Same as C-2267 | 100 kc Step Tuning S-2652E, Unit 11B |
| C-2747 | | Same as C-2258 | 100 kc Step Tuning S-2652E, Unit 11B |
| C-2748 | | Same as C-2267 | 100 kc Step Tuning S-2652E, Unit 11B |
| C-2749 | | Same as C-2258 | 100 kc Step Tuning S-2652E, Unit 11B |
| C-2750 | | Same as C-2267 | 100 kc Step Tuning S-2652E, Unit 11B |
| C-2751 | | Same as C-2267 | 100 kc Step Tuning S-2652E, Unit 11B |
| C-2752 | | Same as C-2267 | 100 kc Step Tuning S-2652E, Unit 11B |
| C-2753 | | Same as C-2267 | 100 kc Step Tuning S-2652C, Unit 11B |
| C-2754 | | Same as C-2102; p/o XV-2651 | Cathode By-Pass V-2651, Unit 11B |
| C-2755 | | Same as C-2102; p/o XV-2651 | Screen By-Pass V-2651, Unit 11B |
| C-2756 | | Same as C-2461 | Grid Coupling V-2652, Unit 11B |
| C-2757 | | Same as C-2102; p/o XV-2652 | Cathode By-Pass V-2652, Unit 11B |
| C-2758 | | Same as C-2102; p/o XV-2652 | Screen By-Pass V-2652, Unit 11B |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|---|
| C-2759 | | Same as C-2461 | Grid Coupling V-2653, Unit 11B |
| C-2760 | | Same as C-2102; p/o XV-2653 | Cathode By-Pass V-2653, Unit 11B |
| C-2761 | | Same as C-2102; p/o XV-2653 | Screen By-Pass V-2653, Unit 11B |
| C-2762 | | Same as C-2461 | Grid Coupling V-2654, Unit 11B |
| C-2763 | | Same as C-2102; p/o XV-2654 | Cathode By-Pass V-2654, Unit 11B |
| C-2764 | | Same as C-2102; p/o XV-2654 | Screen By-Pass V-2654, Unit 11B |
| C-2765 | | Same as C-2461 | DC Blocking V-2654, Unit 11B |
| C-2766 | N16-C-16268-8561 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 30 mmf $\pm 2\%$; 500v DCW; per spec JAN-C-20A; JAN type CC21SH300G | Main Tuning J-2653, Unit 11B |
| C-2767 | | Same as C-2498 | Output Coupling J-2653, Unit 11B |
| C-2768 | | Same as C-2031 | B+ Filter, Unit 11B |
| C-2769 | | Same as C-2031 | B+ Filter, Unit 11B |
| C-2770 | | Same as C-2031 | B+ Filter, Unit 11B |
| C-2771 | | Same as C-2102; p/o XV-2651 | Fil. By-Pass V-2651, Unit 11B |
| C-2772 | | Same as C-2102; p/o XV-2652 | Fil. By-Pass V-2652, Unit 11B |
| C-2773 | | Same as C-2102; p/o XV-2653 | Fil. By-Pass V-2653, Unit 11B |
| C-2774 | | Same as C-2102; p/o XV-2654 | Fil. By-Pass V-2654, Unit 11B |
| C-2775 | | Same as C-2337 | 100 kc Tuning S-2652B, Unit 11B |
| C-2776 | | Same as C-2337 | 100 kc Tuning S-2652C, Unit 11B |
| C-2777 | | Same as C-2337 | 100 kc Tuning S-2652D, Unit 11B |
| C-2778 | | Same as C-2337 | 100 kc Tuning S-2652E, Unit 11B |
| C-2779 | | Same as C-2644 | Keying Voltage Decoupling, Unit 11B |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------|---|--|---|
| C-2780 thru C-2800 | | Not Used | |
| C-2801 | | Same as C-2256 | (20-21) mc Tuning S-2801B, Unit 11C |
| C-2802 | For Replacement Use N16-C-26606-1909 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 18 mmf $\pm 10\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA180K | (21-22) mc Tuning S-2801B, Unit 11C |
| C-2803 | | Same as C-2658 | (22-23) mc Tuning S-2801B, Unit 11C |
| C-2804 | | Same as C-2427 | (23-24) mc Tuning S-2801B, Unit 11C |
| C-2805 | For Replacement Use N16-C-27075-8712 | CAPACITOR, FIXED, BUTTON, MICA DIELECTRIC: 27 mmf $\pm 5\%$; 500v DCW; per BuShips 16C41; NAVY type CB20EA270J | (24-25) mc Tuning S-2801B, Unit 11C |
| C-2806 | N16-C-15624-8856 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 5 mmf ± 0.025 mmf; 500v DCW; per spec JAN-C-20A; JAN type CC21LH050C | 20 mc Trap S-2801B, Unit 11C |
| C-2807 | | Same as C-2253 | (25-26) mc Tuning S-2801B, Unit 11C |
| C-2808 | | Same as C-2258 | (18-19) mc Tuning S-2801B, Unit 11C |
| C-2809 | | Same as C-2257 | (19-20) mc Tuning S-2801B, Unit 11C |
| C-2810 | | Same as C-2267 | Main Trimmer S-2801B, Unit 11C |
| C-2811 | | Same as C-2267 | 100 kc Step Tuning S-2802A, Unit 11C |
| C-2812 | | Same as C-2267 | 100 kc Step Tuning S-2802A, Unit 11C |
| C-2813 | | Same as C-2267 | 100 kc Step Tuning S-2802A, Unit 11C |
| C-2814 | | Same as C-2267 | 100 kc Step Tuning S-2802A, Unit 11C |
| C-2815 | | Same as C-2267 | 100 kc Step Tuning S-2802A, Unit 11C |
| C-2816 | | Same as C-2267 | 100 kc Step Tuning S-2802A, Unit 11C |
| C-2817 | | Same as C-2267 | 100 kc Step Tuning S-2802A, Unit 11C |
| C-2818 | | Same as C-2267 | 100 kc Step Tuning S-2802A, Unit 11C |
| C-2819 | | Same as C-2267 | 100 kc Step Tuning S-2802A, Unit 11C |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|---------------------|---|----------------------|---|
| C-2820 | | Same as C-2337 | 100 kc Step Tuning S-2802A, Unit 11C |
| C-2821 | | Same as C-2430 | Main Tuning S-2801B, Unit 11C |
| C-2822 | | Same as C-2258 | 100 kc Step Tuning S-2802A, Unit 11C |
| C-2823 | | Same as C-2258 | 100 kc Step Tuning S-2802A, Unit 11C |
| C-2824 | | Same as C-2256 | (20-21) mc Tuning S-2801C, Unit 11C |
| C-2825 | | Same as C-2802 | (21-22) mc Tuning S-2801C, Unit 11C |
| C-2826 | | Same as C-2658 | (22-23) mc Tuning S-2801C, Unit 11C |
| C-2827 | | Same as C-2427 | (23-24) mc Tuning S-2801C, Unit 11C |
| C-2828 | | Same as C-2805 | 26 mc Trap S-2801C, Unit 11C |
| C-2829 | | Same as C-2806 | 20 mc Trap S-2801C, Unit 11C |
| C-2830 | | Same as C-2253 | (25-26) mc Tuning S-2801C, Unit 11C |
| C-2831 | | Same as C-2267 | 100 kc Step Tuning S-2802B, Unit 11C |
| C-2832 | | Same as C-2267 | 100 kc Step Tuning S-2802B, Unit 11C |
| C-2833 | | Same as C-2267 | 100 kc Step Tuning S-2802B, Unit 11C |
| C-2834 | | Same as C-2267 | 100 kc Step Tuning S-2802B, Unit 11C |
| C-2835 | | Same as C-2267 | 100 kc Step Tuning S-2802B, Unit 11C |
| C-2836 | | Same as C-2267 | 100 kc Step Tuning S-2802B, Unit 11C |
| C-2837 | | Same as C-2267 | 100 kc Step Tuning S-2802B, Unit 11C |
| C-2838 | | Same as C-2267 | 100 kc Step Tuning S-2802B, Unit 11C |
| C-2839 | | Same as C-2267 | 100 kc Step Tuning S-2802B, Unit 11C |
| C-2840 | | Same as C-2337 | 100 kc Step Tuning S-2802B, Unit 11C |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|----------------------|---|
| C-2841 | | Same as C-2258 | (18-19) mc Tuning S-2801C, Unit 11C |
| C-2842 | | Same as C-2257 | (19-20) mc Tuning S-2801C, Unit 11C |
| C-2843 | | Same as C-2258 | 100 kc Step Tuning S-2802B, Unit 11C |
| C-2844 | | Same as C-2258 | 100 kc Step Tuning S-2802B, Unit 11C |
| C-2845 | | Same as C-2267 | Main Trimmer S-2801C, Unit 11C |
| C-2846 | | Same as C-2430 | Main Tuning S-2801C, Unit 11C |
| C-2847 | | Same as C-2256 | (20-21) mc Tuning S-2801D, Unit 11C |
| C-2848 | | Same as C-2802 | (21-22) mc Tuning S-2801D, Unit 11C |
| C-2849 | | Same as C-2658 | (22-23) mc Tuning S-2801D, Unit 11C |
| C-2850 | | Same as C-2427 | (23-24) mc Tuning S-2801D, Unit 11C |
| C-2851 | | Same as C-2267 | 100 kc Step Tuning S-2802C, Unit 11C |
| C-2852 | | Same as C-2267 | 100 kc Step Tuning S-2802C, Unit 11C |
| C-2853 | | Same as C-2267 | 100 kc Step Tuning S-2802C, Unit 11C |
| C-2854 | | Same as C-2267 | 100 kc Step Tuning S-2802C, Unit 11C |
| C-2855 | | Same as C-2267 | 100 kc Step Tuning S-2802C, Unit 11C |
| C-2856 | | Same as C-2267 | 100 kc Step Tuning S-2802C, Unit 11C |
| C-2857 | | Same as C-2267 | 100 kc Step Tuning S-2802C, Unit 11C |
| C-2858 | | Same as C-2267 | 100 kc Step Tuning S-2802C, Unit 11C |
| C-2859 | | Same as C-2267 | 100 kc Step Tuning S-2802C, Unit 11C |
| C-2860 | | Same as C-2337 | 100 kc Step Tuning S-2802C, Unit 11C |
| C-2861 | | Same as C-2805 | (24-25) mc Tuning S-2801D, Unit 11C |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|----------------------|---|
| C-2862 | | Same as C-2253 | (25-26) mc Tuning S-2801D, Unit 11C |
| C-2863 | | Same as C-2258 | (18-19) mc Tuning S-2801D, Unit 11C |
| C-2864 | | Same as C-2257 | (19-20) mc Tuning S-2801D, Unit 11C |
| C-2865 | | Same as C-2267 | Main Trimmer S-2801D, Unit 11C |
| C-2866 | | Same as C-2430 | Main Tuning S-2801D, Unit 11C |
| C-2867 | | Same as C-2258 | 100 kc Step Tuning S-2802C, Unit 11C |
| C-2868 | | Same as C-2258 | 100 kc Step Tuning S-2802C, Unit 11C |
| C-2869 | | Same as C-2256 | (20-21) mc Tuning S-2801E, Unit 11C |
| C-2870 | | Same as C-2267 | 100 kc Step Tuning S-2802D, Unit 11C |
| C-2871 | | Same as C-2267 | 100 kc Step Tuning S-2802D, Unit 11C |
| C-2872 | | Same as C-2267 | 100 kc Step Tuning S-2802D, Unit 11C |
| C-2873 | | Same as C-2267 | 100 kc Step Tuning S-2802D, Unit 11C |
| C-2874 | | Same as C-2267 | 100 kc Step Tuning S-2802D, Unit 11C |
| C-2875 | | Same as C-2267 | 100 kc Step Tuning S-2802D, Unit 11C |
| C-2876 | | Same as C-2267 | 100 kc Step Tuning S-2802D, Unit 11C |
| C-2877 | | Same as C-2267 | 100 kc Step Tuning S-2802D, Unit 11C |
| C-2878 | | Same as C-2267 | 100 kc Step Tuning S-2802D, Unit 11C |
| C-2879 | | Same as C-2337 | 100 kc Step Tuning S-2802D, Unit 11C |
| C-2880 | | Same as C-2802 | (21-22) mc Tuning S-2801E, Unit 11C |
| C-2881 | | Same as C-2658 | (22-23) mc Tuning S-2801E, Unit 11C |
| C-2882 | | Same as C-2427 | (23-24) mc Tuning S-2801E, Unit 11C |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|-----------------------------|---|
| C-2883 | | Same as C-2805 | (24-25) mc Tuning S-2801E, Unit 11C |
| C-2884 | | Same as C-2253 | (25-26) mc Tuning S-2801E, Unit 11C |
| C-2885 | | Same as C-2258 | (18-19) mc Tuning S-2801E, Unit 11C |
| C-2886 | | Same as C-2257 | (19-20) mc Tuning S-2801E, Unit 11C |
| C-2887 | | Same as C-2267 | Main Trimmer S-2801E, Unit 11C |
| C-2888 | | Same as C-2258 | 100 kc Step Tuning S-2802D, Unit 11C |
| C-2889 | | Same as C-2258 | 100 kc Step Tuning S-2802D, Unit 11C |
| C-2890 | | Same as C-2102; p/o XV-2801 | Cathode By-Pass V-2801, Unit 11C |
| C-2891 | | Same as C-2102; p/o XV-2801 | Screen By-Pass V-2801, Unit 11C |
| C-2892 | | Same as C-2461 | Grid Coupling V-2802, Unit 11C |
| C-2893 | | Same as C-2102; p/o XV-2802 | Cathode By-Pass V-2802, Unit 11C |
| C-2894 | | Same as C-2102; p/o XV-2802 | Screen By-Pass V-2802, Unit 11C |
| C-2895 | | Same as C-2461 | Grid Coupling V-2803, Unit 11C |
| C-2896 | | Same as C-2102; p/o XV-2803 | Cathode By-Pass V-2803, Unit 11C |
| C-2897 | | Same as C-2102; p/o XV-2803 | Cathode By-Pass V-2803, Unit 11C |
| C-2898 | | Same as C-2461 | Grid Coupling V-2804, Unit 11C |
| C-2899 | | Same as C-2102; p/o XV-2804 | Cathode By-Pass V-2804, Unit 11C |
| C-2900 | | Same as C-2102; p/o XV-2804 | Screen By-Pass V-2804, Unit 11C |
| C-2901 | | Same as C-2461 | DC Blocking J-2803, Unit 11C |
| C-2902 | | Same as C-2766 | Main Tuning J-2803, Unit 11C |
| C-2903 | | Same as C-2498 | Output Coupling J-2803, Unit 11C |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|---|
| C-2904 | | Same as C-2031 | B+ Filter, Unit 11C |
| C-2905 | | Same as C-2031 | B+ Filter, Unit 11C |
| C-2906 | | Same as C-2031 | B+ Filter, Unit 11C |
| C-2907 | | Same as C-2102; p/o XV-2804 | Fil. By-Pass V-2804, Unit 11C |
| C-2908 | | Same as C-2102; p/o XV-2803 | Fil. By-Pass V-2803, Unit 11C |
| C-2909 | | Same as C-2102; p/o XV-2802 | Fil. By-Pass V-2802, Unit 11C |
| C-2910 | | Same as C-2102; p/o XV-2801 | Fil. By-Pass V-2801, Unit 11C |
| C-2911 | | Same as C-2258 | 100 kc Step Filter Tuning S-2802A, Unit 11C |
| C-2912 | | Same as C-2258 | 100 kc Step Filter Tuning S-2802B, Unit 11C |
| C-2913 | | Same as C-2258 | 100 kc Step Filter Tuning S-2802C, Unit 11C |
| C-2914 | | Same as C-2258 | 100 kc Step Filter Tuning S-2802D, Unit 11C |
| C-2915 | | Same as C-2644 | Keying Voltage Decoupling, Unit 11C |
| C-2916 | | Same as C-2644 | Grid Return By- Pass V-2802, Unit 11C |
| C-2917 | | Same as C-2644 | Grid Blocking for V-2802, Unit 11C |
| C-2918 thru C-2926 | | Not Used | |
| C-2927 | N16-C-32646-6813 | CAPACITOR, FIXED, MICA DIELECTRIC: 4700 mmf $\pm 10\%$; 500v DCW; per spec JAN-C-5; JAN type CM35C472K | RF Filter |
| C-2928 | | Same as C-2927 | RF By-Pass |
| CR-2201 | N16-T-51738 | CRYSTAL UNIT, RECTIFYING: germanium diode; per spec JAN-1A; JAN type 1N38 | Damping Diode, Unit 6 |
| CR-2326 | | Same as CR-2201 | Damping Diode, Unit 8 |
| CR-2920 | N16-T-51734-10 | CRYSTAL UNIT, RECTIFYING: germanium diode; per spec JAN-1A; JAN type 1N34A; same as CR-1002 | Zero Beat Mixer |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|-----------------------------------|
| E-2001.1 | Low Failure Item | TERMINAL BOARD: ceramic; eight turret lug type term, one common term; 7/8 in. lg, 1/2 in. wd, 9/16 in. h; two no. 3-48 tapped mtg holes, 29/64 in. mtg/c; CBY part 12855; CBTL part/dwg NL-960103-1-1; same as E-1011 | Component Mounting, Unit 1 |
| E-2001.2 | | Same as E-2001.1 | Component Mounting, Unit 1 |
| E-2001.3 | | Same as E-2001.1 | Component Mounting, Unit 1 |
| E-2001.4 | | Same as E-2001.1 | Component Mounting, Unit 1 |
| E-2001.5 | | Same as E-2001.1 | Component Mounting, Unit 1 |
| E-2002 thru E-2030 | | Not Used | |
| E-2031 | Procured on demand by nearest Naval Shore Supply Activity | TERMINAL BOARD: ceramic; eight turret lug type term, one common term; 1-7/32 in. lg, 1-1/32 in. wd, 9/16 in. h; two no. 3-48 tapped mtg holes, 29/64 in. mtg/c; CBY part 12856; CBTL part/dwg NL-960103-1-2 | Component Mounting, Unit 2 |
| E-2032 thru E-2050 | | Not Used | |
| E-2051 | N17-I-59480-7061 | INSULATOR, FEEDTHRU: kovar and glass, kovar tinned finish; round tapered dome shape, flanged, MBCA Ref Dwg Group 9 code no. 351; o/a lg 1-9/16 in., lg of body 5/16 in., 7/16 in. diam; flange mtd; kovar rod 1-9/16 in. lg, 1/8 in. diam force fitted into insulator, rod is flatted at both ends to a thickness of 1/16 in., 1/8 in. diam hole drilled thru flatted portion at both ends; CBTL part/dwg NL-959925-1; p/o Z-2051 | Feed-Thru Term for Z-2051, Unit 3 |
| E-2051.1 | | Same as E-2051; p/o Z-2051 | Feed-Thru Term for Z-2051, Unit 3 |
| E-2051.2 | | Same as E-2051; p/o Z-2051 | Feed-Thru Term for Z-2051, Unit 3 |
| E-2051.3 | | Same as E-2051; p/o Z-2051 | Feed-Thru Term for Z-2051, Unit 3 |
| E-2052 | | Same as E-2031 | Component Mounting, Unit 3 |
| E-2053 thru E-2100 | | Not Used | |
| E-2101 | | Same as E-2031 | Component Mounting, Unit 4 |
| E-2102 thru E-2125 | | Not Used | |
| E-2126.1 | | Same as E-2051; p/o Z-2126 | Feed-Thru Term, Unit 12 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|----------------------------------|
| E-2126. 2 | | Same as E-2051; p/o Z-2126 | Feed-Thru Term, Unit 12 |
| E-2126. 3 | | Same as E-2051; p/o Z-2126 | Feed-Thru Term, Unit 12 |
| E-2126. 4 | | Same as E-2051; p/o Z-2126 | Feed-Thru Term, Unit 12 |
| E-2126. 5 | | Same as E-2051; p/o Z-2126 | Feed-Thru Term, Unit 12 |
| E-2126. 6 | | Same as E-2051; p/o Z-2126 | Feed-Thru Term, Unit 12 |
| E-2127. 1 | Shop Manufacture | INSULATOR, SPACER: rectangular shape w/support surface curved to fit a radius of 13/32 in. ; made of centradite, grade L-3; 21/32 in. lg, 0.534 in. wd, 0.267 in. thk o/a; single axial hole 0.136 in. diam drilled thru length; per spec JAN-I-10; CBN type 400; CBTL part/dwg NL-959926-1; p/o Z-2126 | p/o Oven Assy Z-2126, Unit 12 |
| E-2127. 2 | | Same as E-2127. 1; p/o Z-2126 | p/o Oven Assy Z-2126, Unit 12 |
| E-2128 thru E-2200 | | Not Used | |
| E-2201 | | Same as E-2001. 1 | Component Mount- ing, Unit 6 |
| E-2201. 1 | | Same as E-2001. 1 | Component Mount- ing, Unit 6 |
| E-2201. 2 | | Same as E-2001. 1 | Component Mount- ing, Unit 6 |
| E-2202 | | Same as E-2031 | Component Mount- ing, Unit 6 |
| E-2203 | Shop Manufacture | TERMINAL BOARD: ceramic or melamine type GMG; eight turret lug type term, one common term; o/a dimen 1-1/2 in. lg, 1-5/32 in. wd, 9/16 in. h; two no. 3-48 tapped mtg spacers, 29/64 in. mtg/c; CBY part 13025; CBTL part/dwg NL-960103-1-3; same as E-1013 | Component Mount- ing, Unit 6 |
| E-2204 thru E-2300 | | Not Used | |
| E-2301 | | Same as E-2203 | Component Mount- ing, Unit 7 |
| E-2302 thru E-2325 | | Not Used | |
| E-2326 | | Same as E-2031 | Component Mount- ing, Unit 8 |
| E-2327 | | Same as E-2001. 1 | Component Mount- ing, Unit 8 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------------------|---|--|------------------------------|
| E-2327.1 | | Same as E-2001.1 | Component Mounting, Unit 8 |
| E-2327.2 | | Same as E-2001.1 | Component Mounting, Unit 8 |
| E-2328 thru E-2525 | | Not Used | |
| E-2526 | | Same as E-2001.1 | Component Mounting, Unit 10 |
| E-2527 thru E-2625 | | Not Used | |
| E-2626 | | Same as E-2031 | Component Mounting, Unit 11A |
| E-2627 thru E-2918 | | Not Used | |
| E-2919 | N16-S-63515-4151 | SOCKET, ELECTRON TUBE: 8 contacts, brass, silver pl; octal type; oval; 1-7/8 in. lg, 1-3/8 in. wd, 11/16 in. h, excluding term; phenolic dielectric insulator; one piece saddle mtg, bottom mtg; 1-1/8 in. diam chassis hole required, 2 mtg holes, 0.156 in. diam, 1.500 in. c to c; per spec JAN-S-28A; JAN type TS101PO1; same as KC-1034 | Control Test Point Location |
| E-2920 | N16-A-20661-1005 | ADAPTER, cable: single hole mtg type; for use with RG-55/U, RG-58/U cable; o/a lg 13/16 in.; one hole mtg 5/16 in. diam; type coax cable term, CARO no. 1025; same as E-1320 | Coax Cable Adapter |
| E-2920.1 thru E-2920.9 | | Same as E-2920 | Coax Cable Adapters |
| E-2921 | Shop Manufacture | TERMINAL BOARD: copper sheet, cold rolled, hot tin dipped; w/o term, eight holes 0.120 in. diam equally spaced on 1/2 in. B.C.; w/o barriers; o/a dimen 3/4 in. OD by 1/32 in. thk; one mtg hole in center 0.144 in. diam; CBTL part/dwg NL-900373-1 | Connection Point |
| E-2922 | | Same as E-2921 | Connection Point |
| E-2923 | | Same as E-2921 | Connection Point |
| E-2924 | | Not Used | |
| E-2925 | | Same as E-2921 | Connection Point |
| E-2926 | | Same as E-2921 | Connection Point |
| E-2927 | | Same as E-2921 | Connection Point |
| E-2928 | | Same as E-2921 | Connection Point |
| E-2929 | | Same as E-2921 | Connection Point |
| E-2930 | | Same as E-2203 | Component Mounting |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------------------|---|--|-------------------------|
| E-2931 | N16-K-702781-115 | KNOB: round; black thermosetting phenolic; dull finish; for 1/4 in. diam shaft; two no. 6-32 by 1/8 in. lg set screws; w/ pointer; 13/16 in. diam, 9/16 in. thk, 7/8 in. lg o/a; brass, nickel pl insert; 7/16 in. depth of shaft hole; fluted; CMI part no. RE10F479F type G; CBTL part/dwg NCP-20-1-18-2; same as E-1017 | FSK Phase Mod. |
| E-2932 | N16-A-20661-1002 | ADAPTER, cable: right hand mtg strap type; for use with RG-55/U, RG-58/U cable; o/a lg 1/2 in.; mtd by means of hole in strap 3/8 in. from c to c of cable; type coax cable term; CARO part no. 3975; same as E-1324 | Coax Cable Adapter |
| E-2932.1 thru E-2932.7 | | Same as E-2932 | Coax Cable Adapter |
| E-2933 | N17-C-73108-2800 | ADAPTER, cable: single hole mtg type; for use with RG-59/U, RG-62/U cable; o/a lg 13/16 in.; one hole mtg 5/16 in. diam; type coax cable term; CARO part no. 1050 | Coax Cable Term |
| E-2933.1 | | Same as E-2933 | Coax Cable Term |
| E-2933.2 | | Same as E-2933 | Coax Cable Term |
| E-2933.3 | | Same as E-2933 | Coax Cable Term |
| E-2934 | N16-K-702781-116 | KNOB: round, fluted; black thermosetting phenolic; for 1/4 in. diam shaft; two no. 8-32 thd 1/4 in. lg set screws spaced 120° apart; w/o pointer; 1-1/2 in. diam, 7/8 in. h o/a; brass, nickel pl insert; CMI part no. RE10F479C type E modified; CBTL part/dwg NL-900624-1 | Band Switch Selector |
| E-2934.1 | | Same as E-2934 | Channel Switch Selector |
| E-2934.2 | | Same as E-2934 | Channel Switch Selector |
| E-2934.3 | | Same as E-2934 | Freq Switch Selector |
| E-2934.4 | | Same as E-2934 | Freq Switch Selector |
| E-2934.5 | | Same as E-2934 | Freq Switch Selector |
| E-2934.6 | | Same as E-2934 | Freq Switch Selector |
| E-2934.7 | | Same as E-2934 | Freq Switch Selector |
| E-2934.8 | | Same as E-2934 | Freq Switch Selector |
| F-2001 thru F-2916 | | Not Used | |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|-----------------------------|
| F-2917 | N17-F-14690-5800 | FUSE, CARTRIDGE: 2 amps, 250v; time delay, 150% for 0-1 minute, 300% for 6 seconds min; ferrule type; 1-1/2 in. lg, 0.406 in. diam; per spec MIL-F-15160A; MIL type F09G2R00B; same as F-1002 (four spares for F-2917 included in equipment) | Filament Primary Protection |
| F-2918 | | Same as F-2917 | Oven Heater Protection |
| H-2001 | Low Failure Item | FASTENER: chrome vanadium steel, cad pl; 2 in. lg, 1/4 in. shank diam, 9/16 in. head diam; oval head, slotted; CAXO type 98-OS-5-133 | Cowl Fastener |
| H-2001.1 | | Same as H-2001 | Cowl Fastener |
| H-2002 | N42-P-11500-9100 | PIN: chrome vanadium steel, cad pl, 0.443 in. lg, 0.103 in. diam o/a dimen; 3 serrations centrally located 7/32 in. lg; CAXO type 98-5-CP | Cross Pin for Cowl Fastener |
| H-2002.1 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2003 thru H-2030 | | Not Used | |
| H-2031 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2031.1 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2032 | | Same as H-2001 | Cowl Fastener |
| H-2032.1 | | Same as H-2001 | Cowl Fastener |
| H-2033 thru H-2050 | | Not Used | |
| H-2051 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2051.1 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2051.2 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2051.3 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2052 | Low Failure Item | FASTENER: chrome vanadium steel, cad pl; 55/64 in. lg by 5/8 in. diam o/a; oval head, slotted; CAXO type 98-OS-5-32 | Cowl Fastener |
| H-2052.1 | | Same as H-2052 | Cowl Fastener |
| H-2052.2 | | Same as H-2052 | Cowl Fastener |
| H-2052.3 | | Same as H-2052 | Cowl Fastener |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|-----------------------------------|
| H-2053 | Low Failure Item | CLAMP: transformer clamp; stainless steel; tightened by means of bolt, mtd w/hole 5/32 in. diam; 23/32 in. h by 1-1/2 in. lg o/a; designed to support 7/8 in. diam material, adjustable; CBTL part/dwg NL-900235-1 | Clamp for T-2051, Unit 3 |
| H-2054 thru H-2100 | | Not Used | |
| H-2101 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2101.1 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2102 | | Same as H-2001 | Cowl Fastener |
| H-2102.1 | | Same as H-2001 | Cowl Fastener |
| H-2103 thru H-2150 | | Not Used | |
| H-2151 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2151.1 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2151.2 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2151.3 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2152 | | Same as H-2001 | Cowl Fastener |
| H-2152.1 | | Same as H-2001 | Cowl Fastener |
| H-2152.2 | | Same as H-2001 | Cowl Fastener |
| H-2152.3 | | Same as H-2001 | Cowl Fastener |
| H-2153 thru H-2200 | | Not Used | |
| H-2201 | Low Failure Item | STRAP, bearing: stainless steel; 1-27/32 in. lg by 7/16 in. wd by 1/32 in. thk o/a; two 1/8 in. diam mtg holes, spaced 1-9/16 in. c to c; 1/4 in. diam hole; extruded 1/16 in.; bearing surface for shaft; COC type 2011 | p/o Bearing Block Assy, Unit 6 |
| H-2202 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2202.1 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2202.2 | | Same as H-2002 | Cross Pin for Cowl Fastener |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|--------------------------------|
| H-2202.3 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2203 | Low Failure Item | FASTENER: chrome vanadium steel, cad pl; 1-27/32 in. lg, 9/16 in. diam o/a; oval head, slotted; CAXO type 98-OS-5-129 | Cowl Fastener |
| H-2203.1 | | Same as H-2203 | Cowl Fastener |
| H-2203.2 | | Same as H-2203 | Cowl Fastener |
| H-2203.3 | | Same as H-2203 | Cowl Fastener |
| H-2204 thru H-2300 | | Not Used | |
| H-2301 | | Same as H-2001 | Cowl Fastener |
| H-2301.1 | | Same as H-2001 | Cowl Fastener |
| H-2302 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2302.1 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2303 thru H-2325 | | Not Used | |
| H-2326 | | Same as H-2203 | Cowl Fastener |
| H-2326.1 | | Same as H-2203 | Cowl Fastener |
| H-2326.2 | | Same as H-2203 | Cowl Fastener |
| H-2326.3 | | Same as H-2203 | Cowl Fastener |
| H-2327 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2327.1 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2327.2 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2327.3 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2328 thru H-2425 | | Not Used | |
| H-2426 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2426.1 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2426.2 | | Same as H-2002 | Cross Pin for Cowl Fastener |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|--------------------------------|
| H-2426.3 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2427 | Low Failure Item | FASTENER: chrome vanadium steel, cad pl; 43/64 in. lg by 5/8 in. diam o/a; oval head, slotted; CAXO type 98-OS-5-19 | Cowl Fastener |
| H-2427.1 | | Same as H-2427 | Cowl Fastener |
| H-2427.2 | | Same as H-2427 | Cowl Fastener |
| H-2427.3 | | Same as H-2427 | Cowl Fastener |
| H-2428 | Low Failure Item | CHAIN ASSEMBLY: miniature sprocket type, 0.147 in. pitch lg of link by 0.139 in. wd; stainless steel; 48 pitch length o/a; rivet type links w/disconnecting pin, keeper, and tubular pin; 100 lbs yield strength; CBKH 75SS series; CBTL part/dwg NL-900261-2-2; same as H-1304 | Drive for S-2427, Unit 9 |
| H-2429 thru H-2525 | | Not Used | |
| H-2526 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2526.1 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2526.2 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2526.3 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2527 | | Same as H-2427 | Cowl Fastener |
| H-2527.1 | | Same as H-2427 | Cowl Fastener |
| H-2527.2 | | Same as H-2427 | Cowl Fastener |
| H-2527.3 | | Same as H-2427 | Cowl Fastener |
| H-2528 thru H-2625 | | Not Used | |
| H-2626 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2626.1 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2627 | | Same as H-2203 | Cowl Fastener |
| H-2627.1 | | Same as H-2203 | Cowl Fastener |
| H-2628 thru H-2650 | | Not Used | |
| H-2651 | | Same as H-2427 | Cowl Fastener |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|-------------------------------|---|--|--------------------------------|
| H-2651.1 | | Same as H-2427 | Cowl Fastener |
| H-2651.2 | | Same as H-2427 | Cowl Fastener |
| H-2651.3 | | Same as H-2427 | Cowl Fastener |
| H-2652 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2652.1 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2652.2 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2652.3 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2653 thru H-2800 | | Not Used | |
| H-2801 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2801.1 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2801.2 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2801.3 | | Same as H-2002 | Cross Pin for Cowl Fastener |
| H-2802 | | Same as H-2427 | Cowl Fastener |
| H-2802.1 | | Same as H-2427 | Cowl Fastener |
| H-2802.2 | | Same as H-2427 | Cowl Fastener |
| H-2802.3 | | Same as H-2427 | Cowl Fastener |
| H-2803 thru H-2915 | | Not Used | |
| H-2916 | G42-P-14141-76 | PIN, taper: steel, full length taper; 5/64 in. diam, 5/8 in. lg o/a; CCCU type 1 | Locking Pin |
| H-2916.1 | | Same as H-2916 | Locking Pin |
| H-2917 | G42-P-14141-68 | PIN, taper: steel, full length taper; 5/64 in. diam, 1/2 in. lg o/a; CCCU type 1 | Locking Pin |
| H-2917.1 thru H-2917.19 | | Same as H-2917 | Locking Pin |
| H-2918 | N43-S-99999-0611 | SCREWDRIVER: slot drive; stainless steel blade, 0.328 in. lg by 0.171 in. wd by 0.015 in. thk; cad pl brass sleeve 9.16 in. lg by 0.175 in. diam; 0.016 in. wd by 3/8 in. lg slot; 5-17/32 in lg, 0.175 in. diam o/a dimen; handle laminated thermosetting plastic, type LE; CBTL part/dwg NL-900776-1 | Special RFO Alignment Tool |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--|
| H-2919 | Low Failure Item | WINDOW: door; plexiglass; 0.0625 in. thk by 13-1/4 in. lg by 5-13/16 in. wd o/a dimen; mtd by means of 22 holes 0.144 in. diam spaced approx 1-11/16 in. apart; CCDB type II, clear; CBTL part/dwg NL-900791-12 | p/o Door Assy |
| H-2920 | Low Failure Item | CHAIN: chain assembly incl approx 10 in. bead chain no. 10, one coupling no. 10-A, other coupling no. 10-AD; bead type; 10-1/8 in. c to c; stainless steel; eyelets at each end for mtg; CCCO; CBTL part/dwg NL-900842-1 | Door Stop |
| H-2921 | Low Failure Item | SLIDE, chassis: left hand, c/o inner and outer slide, front latch, ball spacer w/stainless steel balls, and pin stop; corrosion resisting steel, electropolish finish; 23-1/8 in. lg closed, 1-5/8 in. high, 9/16 in. wd o/a; nine 0.169 in. diam mtg holes, countersunk, spaced 2-1/2 in. c to c, two 1/4 in. -28 NF-2 thd mtg holes spaced 1 in. c to c located on back end; CBTL part/dwg NL-900037-12-2; same as H-501 | For RFO Chassis |
| H-2922 | Low Failure Item | SLIDE, chassis: right hand; c/o inner and outer slide, front latch, ball spacer w/stainless steel balls, and pin stop; corrosion resisting steel, electropolish finish; 23-1/8 in. lg closed, 1-5/8 in. high, 9/16 in. wd o/a; nine 0.169 in. diam mtg holes, countersunk, spaced 2-1/2 in. c to c; two 1/4 in. -28 NF-2 thd mtg holes 1 in. c to c located on back end; CBTL part/dwg NL-900037-12-1; same as H-502 | For RFO Chassis |
| H-2923 | Low Failure Item | CHAIN ASSEMBLY: miniature sprocket type, 0.147 in. pitch lg of link by 0.139 in. wd; stainless steel; 202 pitch lg o/a; rivet type links w/disconnecting pin, keeper, and tubular pin; 100 lbs yield strength; CBKH 75-SS series; CBTL part/dwg NL-900261-2-9 | Drive Units 11B Bottom, 11C Bottom |
| H-2924 | Low Failure Item | CHAIN ASSEMBLY: miniature sprocket type, 0.147 in. pitch lg of link by 0.139 in. wd; stainless steel; 194 pitch lg o/a; rivet type links w/disconnecting pin, keeper, and tubular pin; 100 lbs yield strength; CBKH 75-SS series; CBTL part/dwg NL-900261-2-10 | Drive Units 9 Bottom, 11B Top, 11C Top |
| H-2925 | Low Failure Item | CHAIN ASSEMBLY: miniature sprocket type, 0.147 in. pitch lg of link by 0.139 in. wd; stainless steel; 186 pitch lg o/a; rivet type links w/disconnecting pin, keeper, and tubular pin; 100 lbs yield strength; CBKH 75-SS series; CBTL part/dwg NL-900261-2-11 | Drives Unit 10 |
| H-2926 | Low Failure Item | CHAIN ASSEMBLY: miniature sprocket type, 0.147 in. pitch lg of link by 0.139 in. wd; stainless steel; 74 pitch lg o/a; rivet type links w/disconnecting pin, keeper, and tubular pin; 100 lbs yield strength; CBKH 75-SS series; CBTL part/dwg NL-900261-2-7 | Drives Unit 8 |
| H-2927 | Low Failure Item | CHAIN ASSEMBLY: miniature sprocket type, 0.147 in. pitch lg of link by 0.139 in. wd; stainless steel; 68 pitch lg o/a; rivet type links w/disconnecting pin, keeper, and tubular pin; 100 lbs yield strength; CBKH 75-SS series; CBTL part/dwg NL-900261-2-6 | Drives Unit 6 |
| H-2928 | Low Failure Item | CHAIN ASSEMBLY: miniature sprocket type, 0.147 in. pitch lg of link by 0.139 in. wd; stainless steel; 100 pitch lg o/a; rivet type links w/disconnecting pin, keeper, and tubular pin; 100 lbs yield strength; CBKH 75-SS series; CBTL part/dwg NL-900261-2-8 | Drives Unit 9 Top |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|------------------------------------|
| H-2929 | Low Failure Item | CHAIN ASSEMBLY: miniature sprocket type, 0.147 in. pitch lg of link by 0.139 in. wd; stainless steel; 98 pitch lg o/a; rivet type links w/disconnecting pin, keeper, and tubular pin; 100 lbs yield strength; CBKH 75-SS series; CBTL part/dwg NL-900261-2-12 | Drives S-2996 |
| H-2930 | N16-C-300798-866 | CLAMP, tube: stainless steel; c/o strap w/clip and bracket; 1 hole in bracket for no. 10 M.S. for mtg; 1-3/8 in. diam by 3/4 in. h o/a; CAIS type 926-C; same as H-1005 | u/w R-2940 |
| H-2931 | Low Failure Item | HINGE: piano; aluminum, supersat finish, w/full lg brass pin; o/a dimen 12-15/32 in. lg by 2-13/16 in. wd; non-removable pin; 8 holes 0.116 in. diam used to mount channel and tuning charts, 8 holes 0.144 in. diam spaced 1-11/16 in. c to c used for screw mtg to door assy; rounded ends; CBTL part/dwg NL-901022-12 | For Tuning and Channel Charts |
| I-2915 | N18-R-269-5202 | COUNTER, ROTATING, FIXED MOUNTING: movable scale type; incl 2 concentric mtd dials, one for counting increment of each turn, the other for counting turns; incremental dial has 100 equal divisions, graduated for 0 to 100, right to left, graduated in increments of 10, covered by 360° arc; turn counting ring, 0 to 10, right to left, graduated in increments of 1, covered by 330° arc; gear drive; 10 to 1 ratio; white numerals black background; w/knurled locking screw, w/o adapter ring; dull black finish; designed for 1/2 in. shaft; o/a dimen 1-3/4 in. diam, 1-1/2 in. h; CAQM model no. 746 modified; CBTL part/dwg NL-961596-1 | F. S. Deviation Control |
| I-2916 | G17-L-6806-130 | LAMP, GLOW: neon, 105-125v, 1/25 w; MBCA Ref Dwg Group 7, single contact bayonet candelabra base, T-3-1/4, clear, orange-red glow; 1-3/16 in. max o/a h; CG type NE-51; same as I-503 | F. S. Osc. Oven Heater Indicator |
| I-2917 | | Same as I-2916 | Int. Osc. Oven Heater Indicator |
| I-2918 | G17-L-6297 | LAMP, INCANDESCENT: tungsten filament; JAN type TB-14; 6 to 8v; miniature bayonet base; T-3-1/4 bulb; per NAVY dwg RE38F149D, part no. 32; CG part 47 | Crystal Osc. Oven Heater Indicator |
| J-2001 | N17-C-73408-4051 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female, round; straight type; 3/4 in. lg, 9/16 in. diam o/a; not over 500v peak; 52 ohms nominal impedance, non-constant frequency impedance characteristic; cylindrical shape, brass, silver-pl; locking type, molded polystyrene insert, mounts thru 3/8 in. hole; includes lockwasher, hex nut; 3/8 in. -32 NEF-2 thd 7/32 in. lg on body; CANS part/dwg KC-11-04 | 1d Output, Unit 1 |
| J-2002 | | Same as J-2001 | 1b Output, Unit 1 |
| J-2003 | | Same as J-2001 | 1a Output, Unit 1 |
| J-2004 | | Same as J-2001 | 1c Output, Unit 1 |
| J-2005 | | Same as J-2001 | 1e Output, Unit 1 |
| J-2006 | N17-C-73301-5363 | CONNECTOR, RECEPTACLE, ELECTRICAL: 14 contacts, female, round; polarized; straight type; 1-1/4 in. lg, 7/16 in. wd, 27/32 in. h o/a; rectangular shape; molded melamine, two no. 4-40 NC-2 thd screws; 0.937 in. mtg/c; socket, contacts phosphor bronze, gold plated; CCK type MRE-14S-G; same as J-1109 | Unit 1 Power |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|--|
| J-2007 thru J-2030 | | Not Used | |
| J-2031 | | Same as J-2001 | 1a Input to V-2031, Unit 2 |
| J-2032 | | Same as J-2001 | 2b Output from V-2033, Unit 2 |
| J-2033 | | Same as J-2001 | 2c Output from V-2033, Unit 2 |
| J-2034 | | Same as J-2001 | 2a Output from V-2033, Unit 2 |
| J-2035 | | Same as J-2001 | 2d Output from V-2034, Unit 2 |
| J-2036 | | Same as J-2001 | 2e Output from V-2032, Unit 2 |
| J-2037 | | Same as J-2006 | Unit 2 Power |
| J-2038 | N17-C-73407-8421 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female, round; straight type; 1/2 in. lg, excluding term, 3/8 in. diam; non-constant frequency impedance characteristic; cylindrical shape, brass body, silver pl; laminated phenolic and polystyrene insert; one mtg stud, 1/4 in. diam, w/no. 1/4 in. -32 thd, 29/64 in. lg approx, no. 1/4 in. -32 thd hex nut 3/8 in. across flats; CANS type KP-9000 | Test Point for 1a, J-2031, Unit 2 |
| J-2039 thru J-2050 | | Not Used | |
| J-2051 | | Same as J-2001 | 3b Output to Int. Osc. Jack J-2933, Unit 3 |
| J-2052 | | Same as J-2001 | 3a Output, Unit 3 |
| J-2053 | N17-C-73325-2481 | CONNECTOR, RECEPTACLE, ELECTRICAL: 21 contacts, female, round; polarized; straight type; 2-1/4 in. lg, 3/8 in. wd, 27/32 in. h o/a including mtg studs and polarizing pins; rectangular shape, molded melamine; two no. 4-40 NC-2 thd mtg studs, 1/4 in. lg, spaced 1.937 in. c to c; socket contacts brass, gold pl; CCK part/dwg MRE-21S-G | Unit 3 Power |
| J-2054 | | Same as J-2038 | Test Point for 3a, J-2052, Unit 3 |
| J-2055 thru J-2100 | | Not Used | |
| J-2101 | | Same as J-2001 | 2a Input, Unit 4 |
| J-2102 | | Same as J-2001 | 4a Output, Unit 4 |
| J-2103 | | Same as J-2006 | Unit 4 Power |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|----------------------|-----------------------------------|
| J-2104 | | Same as J-2038 | Test Point 2a, J-2101, Unit 4 |
| J-2105 | | Same as J-2038 | Test Point 4a, J-2102, Unit 4 |
| J-2106 thru J-2125 | | Not Used | |
| J-2126 | | Same as J-2053 | Unit 12 Power |
| J-2127 | | Same as J-2038 | Freq Shift Test Point, Unit 12 |
| J-2128 thru J-2150 | | Not Used | |
| J-2151 | | Same as J-2001 | 4a Input, Unit 5 |
| J-2152 | | Same as J-2001 | 2b Input, Unit 5 |
| J-2153 | | Same as J-2001 | 1b Input, Unit 5 |
| J-2154 | | Same as J-2001 | 12a Input, Unit 5 |
| J-2155 | | Same as J-2001 | 3a Input, Unit 5 |
| J-2156 | | Same as J-2001 | 5a Output, Unit 5 |
| J-2157 | | Same as J-2006 | Unit 5 Power |
| J-2158 | | Same as J-2038 | Test Point 4a, J-2151, Unit 5 |
| J-2159 | | Same as J-2038 | Test Point 2b, J-2152, Unit 5 |
| J-2160 | | Same as J-2038 | Test Point 1b, J-2153, Unit 5 |
| J-2161 | | Same as J-2038 | Test Point 5a, J-2156, Unit 5 |
| J-2162 thru J-2200 | | Not Used | |
| J-2201 | | Same as J-2001 | 1c Input, Unit 6 |
| J-2202 | | Same as J-2001 | 6c Output, Unit 6 |
| J-2203 | | Same as J-2001 | 6a Output, Unit 6 |
| J-2204 | | Same as J-2001 | 2c Input, Unit 6 |
| J-2205 | | Same as J-2001 | 5a Input, Unit 6 |
| J-2206 | | Same as J-2001 | 6b Output, Unit 6 |
| J-2207 | | Same as J-2053 | Unit 6 Power |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|----------------------|----------------------------------|
| J-2208 | | Same as J-2038 | Test Point 1c, Unit 6 |
| J-2209 | | Same as J-2038 | Test Point 2c, Unit 6 |
| J-2210 | | Same as J-2038 | Test Point 5a, Unit 6 |
| J-2211 | | Same as J-2038 | Test Point 6b, Unit 6 |
| J-2212 thru J-2300 | | Not Used | |
| J-2301 | | Same as J-2001 | 2d Input, Unit 7 |
| J-2302 | | Same as J-2001 | 7b Output, Unit 7 |
| J-2303 | | Same as J-2001 | 7a Output, Unit 7 |
| J-2304 | | Same as J-2006 | Unit 7 Power |
| J-2305 | | Same as J-2038 | Test Point 2d, J-2301, Unit 7 |
| J-2306 | | Same as J-2038 | Test Point 7b, J-2302, Unit 7 |
| J-2307 | | Same as J-2038 | Test Point 7a, J-2303, Unit 7 |
| J-2308 thru J-2325 | | Not Used | |
| J-2326 | | Same as J-2001 | 1d Input, Unit 7 |
| J-2327 | | Same as J-2001 | 8a Output, Unit 8 |
| J-2328 | | Same as J-2001 | 7a Input, Unit 8 |
| J-2329 | | Same as J-2001 | 6b Input, Unit 8 |
| J-2330 | | Same as J-2001 | 8b Output, Unit 8 |
| J-2331 | | Not Used | |
| J-2332 | | Same as J-2006 | Unit 8 Power |
| J-2333 | | Same as J-2038 | 1d Test Point, Unit 8 |
| J-2334 | | Same as J-2038 | 7a Test Point, Unit 8 |
| J-2335 | | Same as J-2038 | 6b Test Point, Unit 8 |
| J-2336 | | Same as J-2038 | 8b Test Point, Unit 8 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|----------------------|---|
| J-2337 thru J-2425 | | Not Used | |
| J-2426 | | Same as J-2001 | 8b Input, Unit 9 |
| J-2427 | | Same as J-2001 | 7b Input, Unit 9 |
| J-2428 | | Same as J-2001 | 9 Output, Unit 9 |
| J-2429 | | Same as J-2006 | Unit 9 Power |
| J-2430 | | Same as J-2038 | Test Point for 8b, J-2426, Unit 9 |
| J-2431 | | Same as J-2038 | Test Point for 7b, J-2427, Unit 9 |
| J-2432 | | Same as J-2038 | Test Point for 9, J-2427, Unit 9 |
| J-2433 thru J-2525 | | Not Used | |
| J-2526 | | Same as J-2001 | 2e Input, Unit 10 |
| J-2527 | | Same as J-2001 | 10 Output, Unit 10 |
| J-2528 | | Same as J-2006 | Unit 10 Power |
| J-2529 | | Same as J-2038 | Test Point for 2e, J-2526, Unit 10 |
| J-2530 | | Same as J-2038 | Test Point for 10, J-2527, Unit 10 |
| J-2531 thru J-2625 | | Not Used | |
| J-2626 | | Same as J-2001 | 9a Input, V-2626, Unit 11A |
| J-2627 | | Same as J-2001 | 10a Input, V-2626, Unit 11A |
| J-2628 | | Same as J-2001 | 11a Output V-2629, Unit 11A |
| J-2629 | | Same as J-2006 | Unit 11A Power |
| J-2630 | | Same as J-2038 | Test Point for 9a, J-2626, Unit 11A |
| J-2631 | | Same as J-2038 | Test Point for 10a, J-2627, Unit 11A |
| J-2632 | | Same as J-2038 | Test Point for 11a, J-2628, Unit 11A |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|--|
| J-2633 thru J-2650 | | Not Used | |
| J-2651 | | Same as J-2001 | 10b Input, V-2651, Unit 11B |
| J-2652 | | Same as J-2001 | 9b Input, V-2651, Unit 11B |
| J-2653 | | Same as J-2001 | 11b Output, V-2654, Unit 11B |
| J-2654 | | Same as J-2006 | Unit 11B Power |
| J-2655 | | Same as J-2038 | Test Point for 10b, J-2651, Unit 11B |
| J-2656 | | Same as J-2038 | Test Point for 9b, J-2652, Unit 11B |
| J-2657 | | Same as J-2038 | Test Point for 11b, J-2653, Unit 11B |
| J-2658 thru J-2800 | | Not Used | |
| J-2801 | | Same as J-2001 | 10c Input, V-2801, Unit 11C |
| J-2802 | | Same as J-2001 | 9c Input, V-2801, Unit 11C |
| J-2803 | | Same as J-2001 | 11c Output, V-2804, Unit 11C |
| J-2804 | | Same as J-2006 | Unit 11C Power |
| J-2805 | | Same as J-2038 | Test Point for 10c, J-2801, Unit 11C |
| J-2806 | | Same as J-2038 | Test Point for 9c, J-2802, Unit 11C |
| J-2807 | | Same as J-2038 | Test Point for 11c, J-2803, Unit 11C |
| J-2808 thru J-2915 | | Not Used | |
| J-2916 | N17-C-99999-2015 | CONNECTOR, RECEPTACLE, ELECTRICAL: consists of double row of 8 sliding contacts per row, male, flat; 2-7/16 in. lg, 7/8 in. wd, 9/16 in. h excluding contacts and term; w/ partially enclosed plastic shell; polarized, non-locking; 5 amp, 600v DC; mtd by two 0.125 in. diam holes in diagonal corners, spaced 2.024 in. c to c in lg and 0.460 in. c to c in wd; CPH type 26-159-16; same as P-401 | Inter-Unit Wiring |
| J-2917 | | Same as J-2916 | Inter-Unit Wiring |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------|---|--|--|
| J-2918 | | Same as J-2916 | Inter-Unit Wiring |
| J-2919 | N17-C-99999-2016 | CONNECTOR, RECEPTACLE, ELECTRICAL: c/o double row of 8 sliding contacts per row, female; 2-7/16 in. lg, 7/8 in. wd, 9/16 in. h; polarized; nonlocking; 5 amp, 600v DC; mtd by two 0.125 in. diam holes in diagonal corners, spaced 2.024 in. c to c in lg, and 0.460 in. c to c in wd; CPH type 26-190-16-1; same as J-601 | Front Panel Connection |
| J-2920 | | Same as J-2919 | Front Panel Connection |
| J-2921 thru J-2927 | | Not Used | |
| J-2928 | N17-C-73108-7660 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female, round; straight type; 1-1/32 in. lg, 3/4 in. wd across mounting plate; 500v peak; RF connector, not matched; cylindrical shape; polystyrene insert; four no. 3-56 tapped mtg holes in corners of mtg flange, 0.50 in. mtg/c; MIL type UG-262/U | RFO Output |
| J-2929 | N17-C-73108-1262 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female, round; straight type; 1-1/32 in. lg, 3/4 in. wd across mtg plate; 500v peak; RF connector, 52 ohms nominal impedance; cylindrical shape; polystyrene insert; four no. 3-56 tapped mtg holes in corners of mtg flange 0.50 in. mtg/c; JAN type UG-291/U; same as J-1303 | 10 kc Test Jack |
| J-2930 | | Same as J-2929 | 10 kc Test Jack |
| J-2931 | N17-C-99999-1198 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female, round; straight type; 13/16 in. lg, 11/16 in. sq base o/a dimen excluding protruding contact; 500v AC RMS; RF connector, 52 ohms nominal impedance, constant frequency impedance characteristic; cylindrical shape w/sq mount at end; brass, silver pl; locking type; copolymer insert; 4 holes w/no. 3-56 in. thd, 0.500 in. mtg/c; MIL type UG-290A/U | 100 kc Test Jack |
| J-2932 | | Same as J-2929 | 100 kc Step Test Jack |
| J-2933 | | Same as J-2931 | Int. Osc. Test Jack |
| J-2934 | | Same as J-2931 | Freq. Shift Osc. Test Jack |
| K-2151 | N17-R-65155-6075 | RELAY, ARMATURE: contact arrangement 2C, MBCA Ref Dwg Group 4, single break, AC-DC, 4 amp, 150 w; 1 inductive winding, 500 ohms, 24v DC operating voltage; 6 term on contacts, 2 term on coil; continuous duty; 2-1/4 in. lg, 1-1/8 in. wd, 1-3/8 in. h o/a dimen; mtd by means of 2 no. 6-32 tapped holes spaced 3/4 in. c to c; impregnated coil; open frame type; CRY type J part no. A-45701; per BuShips spec no. 40T9; CBTL part/dwg NL-961378-1 | Freq. Shift CW Selector, Unit 5 |
| L-2001 | N16-C-76737-6510 | COIL, RADIO FREQUENCY: 1700 μ h at 1000 cps w/o slug and shield can, 1760 μ h at 0.25 mc with slug and shield can, 34 ohms DC resistance; 420 turns per pie, (840 total), no. 38 EF AWG copper wire, single enamel, single polyamide fiber covered conductor, one winding, two pie, universal wound, untapped, | Freq. Adj. for Crystal Oven Y-2001, Unit 1 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|---|
| L-2001 (cont) | | shielded with cylindrical aluminum can, molded thermosetting plastic form, powdered iron core, coil dimensions, excluding term mtg attachments and tuning devices 2-25/32 in. lg, 0.928 in. h, 1.089 in. wd, o/a coil form dimen 2-7/32 in. lg excluding locking stud, 0.828 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; four solder lug type term located on one end of coil form; two no. 4-40 thd spade mtg bolts 51/64 in. lg with 31/32 in. mtg/c; part no. L-2001 stamped on coil form and shield can; CBTL part/dwg NL-960140-14-1 | |
| L-2002 | N16-C-76737-6611 | COIL, RADIO FREQUENCY: 1340 μ h at 0.25 mc w/o slug, 1700 μ h to 2400 μ h with slug tuning, 34 ohms DC resistance; 540 turns no. 38EF AWG copper wire, single enamel, single fiber covered conductor, one winding, one pie, universal wound, untapped, unshielded, bakelite form, powdered iron core, o/a coil dimen 1-5/16 in. lg by 21/64 in. diam, o/a coil form dimen 1-5/16 in. lg, 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two term, solder lug type located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; no. 19 stamped on coil form; CBTL part/dwg NL-960090-14-19 | Osc. Spurious Trap C-2013, Unit 1 |
| L-2003 thru L-2050 | | Not Used | |
| L-2051 | For Reference Only | COIL ASSEMBLY, RF: main oscillator tank coils, 441.5 μ h; c/o L-2051A, L-2051B; p/o Z-2051 | Main Osc. Tank Z-2051, Unit 3 |
| L-2051A | For Reference Only | COIL, RADIO FREQUENCY: 432.5 μ h +1% at 100 kc, 3.45 ohms DC resistance; 170 turns no. 5/36 Litz copper conductor, double fiber covered conductor, one winding, six layer bank wound, tapped at 29 and 119 turns, unshielded ceramic form, air core, o/a coil dimen 1-3/4 in. lg, 0.769 in. diam; four term, solder post type located outside coil form; mtd by two no. 6-32 NC-1 tapped holes spaced 1-1/2 in. c to c; coil term stamped O, C, K, G; CBTL part/dwg NL-960085-3; p/o L-2051 | Main Osc. Tank Z-2051, Unit 3 |
| L-2051B | For Reference Only | COIL, RADIO FREQUENCY: 24 to 42 turns of no. 23R AWG single resin covered copper magnet wire, to resonate at 100 kc in Z-2051, single layer wound, unshielded, ceramic form, air core, o/a coil form dimen 1-9/16 in. lg by 0.625 in. OD; two pigtail wire term located on either end of coil extending from terminal lugs; mtd by two no. 4-40 NC-1 tapped holes with 0.406 in. mtg/c located on one end of coil form; CBTL part/dwg NL-960187-2; p/o L-2051 | Main Osc. Tank Trimmer Z-2051, Unit 3 |
| L-2052 | N16-C-72955-3796 | COIL, RADIO FREQUENCY: 3.95 μ h without slug, 4.2 to 5.4 μ h with slug tuning; 23 turns no. 23R AWG single resin covered copper magnet wire, one winding, single layer, untapped, unshielded, ceramic form, air core, o/a coil dimen 1-9/16 in. lg by 5/8 in. diam; two wire pigtail term from term lugs located outside coil form at each end; mtd by two no. 4-40 NC-1 tapped holes with 0.406 in. mtg/c; CBTL part/dwg NL-960086-2 | (91-92) kc Tank S-2051B, Unit 3 |
| L-2053 | | Same as L-2052 | (92-93) kc Tank S-2051B, Unit 3 |
| L-2054 | | Same as L-2052 | (93-94) kc Tank S-2051B, Unit 3 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|-------------------------------------|
| L-2055 | | Same as L-2052 | (94-95) kc Tank S-2051B, Unit 3 |
| L-2056 | | Same as L-2052 | (95-96) kc Tank S-2051B, Unit 3 |
| L-2057 | | Same as L-2052 | (96-97) kc Tank S-2051B, Unit 3 |
| L-2058 | | Same as L-2052 | (97-98) kc Tank S-2051B, Unit 3 |
| L-2059 | | Same as L-2052 | (98-99) kc Tank S-2051B, Unit 3 |
| L-2060 | | Same as L-2052 | (99-100) kc Tank S-2051B, Unit 3 |
| L-2061 | N16-C-76522-7262 | COIL, RADIO FREQUENCY: 0.62 μ h at 25 mc without slug, 0.67 μ h to 1.2 μ h with slug tuning; 13 turns no. 22 EF2 AWG copper wire, one winding, single layer wound, untapped, unshielded, bakelite form, powdered iron core, o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two wire pigtail type term located outside coil form; mtd by one no. 10-32 thd bushing, 1/4 in. lg; CBTL part/dwg NL-960120-2-4 | 100 Cycle Step S-2052B, Unit 3 |
| L-2062 | N16-C-76522-7251 | COIL, RADIO FREQUENCY: 0.62 μ h at 25 mc without slug, 0.67 μ h to 1.2 μ h with slug tuning; 12-1/2 turns no. 22 EF2 AWG copper wire, one winding, single layer wound, untapped, unshielded, bakelite form, powdered iron core, o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two wire pigtail term located outside coil form; mtd by one no. 10-32 thd bushing 1/4 in. lg; CBTL part/dwg NL-960120-2-3 | 100 cycle Step S-2052B, Unit 3 |
| L-2063 | | Same as L-2061 | 100 Cycle Step S-2052B, Unit 3 |
| L-2064 | | Same as L-2062 | 100 Cycle Step S-2052B, Unit 3 |
| L-2065 | | Same as L-2061 | 100 Cycle Step S-2052B, Unit 3 |
| L-2066 | | Same as L-2062 | 100 Cycle Step S-2052B, Unit 3 |
| L-2067 | | Same as L-2061 | 100 Cycle Step S-2052B, Unit 3 |
| L-2068 | | Same as L-2062 | 100 Cycle Step S-2052B, Unit 3 |
| L-2069 | | Same as L-2061 | 100 Cycle Step S-2052B, Unit 3 |
| L-2070 | N16-C-76215-4083 | COIL, RADIO FREQUENCY: three turns no. 20 EF2 AWG copper wire, one winding, single layer wound, untapped, unshielded, bakelite form, powdered iron core, o/a coil form | 10 Cycle Step S-2053B, Unit 3 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|----------------------------------|
| L-2070 (cont) | | dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two wire pigtail term located outside coil form; mtd by one no. 10-32 thd bushing 1/4 in. lg; CBTL part/dwg NL-960120-2-2 | |
| L-2071 | N16-C-76206-1246 | COIL, RADIO FREQUENCY: 2-1/2 turns no. 20 EF2 AWG copper wire, single enamel, double fibre covered conductor, one winding, single layer winding, untapped, unshielded, bake-lite form, powdered iron core, o/a coil dimen 1-5/16 in. lg by 21/64 in. diam, o/a coil form dimen 1-5/16 in. lg, 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment at one end of coil form; two wire pigtail type term located outside coil form; mtd by one no. 10-32 thd bushing, 1/4 in. lg; CBTL part/dwg NL-960120-2-1 | 10 Cycle Step S-2053B, Unit 3 |
| L-2072 | | Same as L-2070 | 10 Cycle Step S-2053B, Unit 3 |
| L-2073 | | Same as L-2071 | 10 Cycle Step S-2053B, Unit 3 |
| L-2074 | | Same as L-2070 | 10 Cycle Step S-2053B, Unit 3 |
| L-2075 | | Same as L-2071 | 10 Cycle Step S-2053B, Unit 3 |
| L-2076 | | Same as L-2070 | 10 Cycle Step S-2053B, Unit 3 |
| L-2077 | | Same as L-2071 | 10 Cycle Step S-2053B, Unit 3 |
| L-2078 | | Same as L-2070 | 10 Cycle Step S-2053B, Unit 3 |
| L-2079 | | Same as L-2071 | 10 Cycle Step S-2053B, Unit 3 |
| L-2080 | | Same as L-2052 | Zero Adjustment, Unit 3 |
| L-2081 thru L-2125 | | Not Used | |
| L-2126 | N16-C-74464-9087 | COIL, RADIO FREQUENCY: 1398 μ h at 100 kc, 6.54 ohms DC resistance; 314 turns no. 5/36 AWG Litz copper conductor, single enamel, double fiber covered conductor, one winding, 8 layer bank wound, tapped at 53 and 228 turns, unshielded, ceramic form, air core, coil dimen 1-3/4 in. lg by 0.769 in. diam; o/a coil form dimen 1-3/4 in. lg by 0.769 in. diam; four solder lug type term located outside coil form; two no. 6-32 NC-1 tapped mtg holes 0.531 in. c to c; letters O, C, K, G, stamped on coil form next to term; CBTL part/dwg NL-960084-3; p/o Z-2126 | Osc. Tank Z-2126, Unit 12 |
| L-2127 thru L-2200 | | Not Used | |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|------------------------------|
| L-2201 | N16-C-74120-3665 | COIL, RADIO FREQUENCY: 460 μ h at 1000 cps, 10.5 ohms DC resistance; 245 turns no. 38 EF AWG copper conductor, single enamel, single polyamide fiber covered conductor, one winding, one pie, universal wound, untapped, unshielded; iron coil form, iron core, coil dimen excluding term 5/16 in. diam, 17/32 in. lg; o/a coil form dimen 17/32 in. lg by 5/32 in. diam; two wire pigtail type term located axially at each end of coil form; term mtg; blue dot stamped on coil form; mfd by CAMQ part no. LPC-3-460F, part/dwg X-2017; per spec BuShips 16C38, Grade B; CBTL part/dwg NL-960147-1-3 | Low Pass Filter, Unit 6 |
| L-2202 | | Same as L-2201 | Low Pass Filter, Unit 6 |
| L-2203 | | Not Used | |
| L-2204 | N16-C-76657-2810 | COIL, RADIO FREQUENCY: 70 μ h at 1.25 mc w/o slug, 74 μ h to 113 μ h w/slug tuning, 2.50 ohms DC resistance; 102 turns no. 5/41 EF2 AWG Litz copper conductor, single enamel, double polyamide fiber covered conductor, one winding, one pie, universal wound, untapped, unshielded, bakelite form, powdered iron core, o/a coil dimen excluding term 1-5/16 in. lg by 21/64 in. diam; o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two solder lug type term located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; no. 16 stamped on coil form; CBTL part/dwg NL-960090-14-16 | 210 kc Tank, S-2201D, Unit 6 |
| L-2205 | | Same as L-2204 | 220 kc Tank S-2201D, Unit 6 |
| L-2206 | | Same as L-2204 | 230 kc Tank S-2201D, Unit 6 |
| L-2207 | N16-C-76647-9526 | COIL, RADIO FREQUENCY: 49 μ h at 1.25 mc w/o slug, 52 μ h to 83 μ h w/slug tuning, 2.1 ohms DC resistance; 88 turns no. 5/41 EF2 AWG Litz copper conductor, single enamel, double polyamide fiber covered conductor, one winding, one pie, universal wound, untapped, unshielded, bakelite form, powdered iron core, coil dimen 1-5/16 in. lg by 21/64 in. diam; o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two solder lug type term located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; no. 15 stamped on coil form; CBTL part/dwg NL-960090-14-15 | 240 kc Tank S-2201D, Unit 6 |
| L-2208 | | Same as L-2207 | 250 kc Tank S-2201D, Unit 6 |
| L-2209 | N16-C-76646-1817 | COIL, RADIO FREQUENCY: 35 μ h at 2.5 mc w/o slug, 38 μ h to 66 μ h w/slug tuning, 1.8 ohms DC resistance; 76 turns no. 34 EF2 AWG copper conductor, single enamel, double polyamide fiber covered conductor, one winding, one pie, universal wound, untapped, unshielded, bakelite form, powdered iron core, coil dimen 1-5/16 in. lg by 21/64 in. diam; o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, screwdriver adjustment located at one end of coil form; two solder lug type term located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; no. 18 stamped on coil form; CBTL part/dwg NL-960090-14-18 | 260 kc Tank S-2201D, Unit 6 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|-----------------------------------|
| L-2210 | | Same as L-2209 | 270 kc Tank S-2201D, Unit 6 |
| L-2211 | N16-C-76645-3441 | COIL, RADIO FREQUENCY: 29 μ h at 2.5 mc w/o slug, 32 μ h to 53 μ h w/slug tuning, 1.6 ohms DC resistance; 69 turns no. 5/41 EF2 AWG Litz copper conductor, single enamel, double polyamide fiber covered conductor, one winding, one pie, universal wound, untapped, unshielded, bakelite form, powdered iron core, coil dimen 1-5/16 in. lg by 21/64 in. diam; o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two solder lug type term located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; no. 14 stamped on coil form; CBTL part/dwg NL-960090-14-14 | 280 kc Tank S-2201D, Unit 6 |
| L-2212 | | Same as L-2211 | 290 kc Tank S-2201D, Unit 6 |
| L-2213 | | Not Used | |
| L-2214 | | Not Used | |
| L-2215 | | Same as L-2201 | Osc. Plate Load V-2205, Unit 6 |
| L-2216 | | Same as L-2201 | Spurious Choke, Unit 6 |
| L-2217 thru L-2300 | | Not Used | |
| L-2301 | N16-C-73092-8301 | COIL, RADIO FREQUENCY: 10 μ h at 7.9 mc, 0.141 ohms DC resistance; 36 turns no. 28 AWG copper conductor, single enamel covering, one winding, single layer wound, untapped, unshielded, powdered iron form, powdered iron core, coil dimen excluding term 5/8 in. lg by 7/32 in. diam, o/a coil form dimen 5/8 in. lg by 3/16 in. diam; two wire lead term located axially; term mtd; CBTL part/dwg NL-961903-1 | Spurious Filter, Unit 7 |
| L-2302 | N16-C-73811-4168 | COIL, RADIO FREQUENCY: 120 μ h at 1000 cps, 7.5 ohms DC resistance; 191 turns no. 38 AWG copper conductor, single enamel, single polyamide fiber covered conductor, one winding, one pie, universal wound, untapped, unshielded, phenolic coil form, phenolic core, coil dimen excluding term, 5/16 in. diam by 17/32 in. lg, o/a coil form dimen 17/32 in. lg by 5/32 in. diam; two wire pigtail type term located axially at each end of coil form; term mtg; black dot stamped on coil form; CAMQ part no. LPB-3-120F, part/dwg no. X-2017; CBTL part/dwg NL-960147-1-2 | Spurious Filter, Unit 7 |
| L-2303 | | Same as L-2302 | Spurious Filter, Unit 7 |
| L-2304 thru L-2325 | | Not Used | |
| L-2326 | | Same as L-2302 | Osc. Plate Load V-2329, Unit 8 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--------------------------------|
| L-2327 | N16-C-76608-1101 | COIL, RADIO FREQUENCY: 7.4 μ h at 5.0 mc w/o slug, 8.0 μ h to 15.6 μ h w/slug tuning, 1.7 ohms DC resistance; 36 turns no. 38 EF2 AWG copper conductor, single enamel, double polyamide fiber covered conductor, one winding, one pie, universal wound, untapped, unshielded, bakelite form, powdered iron core, coil dimen 1-5/16 in. lg by 21/64 in. diam; o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two solder lug type term located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; no. 17 stamped on coil form; CBTL part/dwg no. NL-960090-14-17 | 1.6 mc Tank S-2326G, Unit 8 |
| L-2328 | | Same as L-2327 | 1.7 mc Tank S-2326G, Unit 8 |
| L-2329 | N16-C-73108-1029 | COIL, RADIO FREQUENCY: 5.8 μ h at 5.0 mc w/o slug, 6.1 μ h to 11.5 μ h w/slug tuning, 1.6 ohms DC resistance; 36 turns no. 38 EF AWG copper conductor, single enamel, single polyamide fiber covered conductor, one winding, single layer wound, untapped, unshielded, bakelite form, powdered iron core, o/a coil dimen 1-5/16 in. lg by 21/64 in. diam; o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two solder lug type term not grounded located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; no. 20 stamped on coil form; CBTL part/dwg NL-960090-14-20 | 1.8 mc Tank S-2326G, Unit 8 |
| L-2330 | | Same as L-2329 | 1.9 mc Tank S-2326G, Unit 8 |
| L-2331 | N16-C-72136-6063 | COIL, RADIO FREQUENCY: 4.3 μ h at 5.0 mc w/o slug, 4.5 μ h to 8.6 μ h w/slug tuning, 1.25 ohms DC resistance; 27 turns no. 38 EF2 AWG copper wire, single enamel, double polyamide fiber covered conductor, one winding, one pie, universal wound, untapped, unshielded, bakelite form, powdered iron core, coil dimen 1-5/16 in. lg by 21/64 in. diam; o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two solder lug type term not grounded located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; CBTL part/dwg NL-960090-14-22 | 2.0 mc Tank S-2326G, Unit 8 |
| L-2332 | | Same as L-2331 | 2.1 mc Tank S-2326G, Unit 8 |
| L-2333 | N16-C-71581-1126 | COIL, RADIO FREQUENCY: 3.1 μ h at 5.0 mc w/o slug, 3.3 μ h to 6.0 μ h w/slug tuning, 1.0 ohms DC resistance; 22 turns no. 38 EF2 AWG copper conductor, single enamel, double polyamide fiber covered conductor, one winding, one pie, universal wound, untapped, unshielded, bakelite form, powdered iron core, coil dimen 1-5/16 in. lg by 21/64 in. diam, o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two solder lug type term not grounded located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; color coded red-brown on coil form; CBTL part/dwg NL-960090-14-21 | 2.2 mc Tank S-2326G, Unit 8 |
| L-2334 | | Same as L-2333 | 2.3 mc Tank S-2326G, Unit 8 |
| L-2335 | | Same as L-2333 | 2.4 mc Tank S-2326G, Unit 8 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|-----------------------------------|
| L-2336 | N16-C-73615-2870 | COIL, RADIO FREQUENCY: 63 μ h at 1000 cps, 5.5 ohms DC resistance; 138 turns no. 38 EF AWG copper conductor, single enamel, single polyamide fiber covered conductor, one winding, one pie, universal wound, untapped, unshielded, phenolic coil form, phenolic core, coil dimen excluding term 5/16 in. diam by 17/32 in. lg; o/a coil form dimen 17/32 in. lg by 5/32 in. diam; two wire pigtail term located axially at each end of coil form; term mtd; red dot stamped on coil form; CAMQ part no. LPB-3-63F, part/dwg no. X-2017; CBTL part/dwg NL-960147-1-1 | Low Pass Filter, Unit 8 |
| L-2337 | | Same as L-2336 | Low Pass Filter, Unit 8 |
| L-2338 | N16-C-76533-5681 | COIL, RADIO FREQUENCY: 1.19 μ h at 12.5 mc w/o slug and shield can; 10 turns no. 32 EF-2 AWG copper wire, single enamel, double polyamide fiber covered conductor, one winding, single layer wound, untapped, shielded, cylindrical aluminum can, molded thermosetting plastic form, powdered iron core, coil dimen excluding term, mtg attachments and tuning devices 2-25/32 in. lg by 0.928 in. diam; o/a coil form dimen 2-7/32 in. lg by 0.828 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; four solder lug type term located outside coil form; two no. 4-40 thd spade mtg bolts 51/64 in. lg spaced 31/32 in. c to c; part no. L-2338 stamped on coil form and shield can; CBTL part/dwg NL-960140-14-32 | (16.6-17.5) mc Filter, Unit 8 |
| L-2339 | | Same as L-2338 | (16.6-17.5) mc Filter, Unit 8 |
| L-2340 | | Same as L-2302 | Spurious Choke, Unit 8 |
| L-2341 thru L-2425 | | Not Used | |
| L-2426 | N16-C-76522-3309 | COIL, RADIO FREQUENCY: 0.53 μ h at 12.5 mc w/o slug, 0.56 μ h to 0.95 μ h w/slug tuning; 8 turns no. 30 EF2 AWG copper conductor, single enamel, double polyamide fiber covered, one winding, single layer wound, untapped, unshielded, bakelite form, powdered iron core, coil dimen 1-5/16 in. lg by 21/64 in. diam, o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two solder lug type term located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; no 1 stamped on coil form; CBTL part/dwg NL-960090-14-1 | (22-23) mc Tuning S-2426C, Unit 9 |
| L-2427 | N16-C-76520-8925 | COIL, RADIO FREQUENCY: 0.40 μ h at 12.5 mc w/o slug, 0.45 μ h to 0.70 μ h w/slug tuning; 7 turns no. 28 EF2 AWG copper conductor, single enamel, double polyamide fiber covered, one winding, single layer wound, untapped, unshielded, bakelite form, powdered iron core, coil dimen 1-5/16 in. lg by 21/64 in. diam; o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two solder lug type term located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; no. 5 stamped on coil form; CBTL part/dwg NL-960090-14-5 | (27-28) mc Tuning S-2426C, Unit 9 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|---------------------|---|---|---|
| L-2428 | N16-C-76520-3836 | COIL, RADIO FREQUENCY: 0.21 μ h at 25 mc w/o slug, 0.23 μ h to 0.34 μ h w/slug tuning; 5 turns no. 22 EF2 AWG copper conductor, single enamel, double polyamide fiber covered, one winding, single layer wound, untapped, unshielded, bakelite form, powdered iron core, coil dimen 1-5/16 in. lg by 21/64 in. diam; o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two solder lug type term located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; no. 3 stamped on coil form; CBTL part/dwg NL-960090-14-3 | (32-33) mc Tuning S-2426C, Unit 9 |
| L-2429 | N16-C-76520-2180 | COIL, RADIO FREQUENCY: 0.16 μ h at 25 mc w/o slug, 0.17 μ h to 0.25 μ h w/slug tuning; 4 turns no. 22 EF2 AWG copper conductor, single enamel, double polyamide fiber covered conductor, one winding, single layer wound, untapped, unshielded, bakelite form, powdered iron core, coil dimen 1-5/16 in. lg by 21/64 in. diam; o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two solder lug type term located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; no. 4 stamped on coil form; CBTL part/dwg NL-960090-14-4 | (37-38) mc Tuning S-2426C, Unit 9 |
| L-2430 | | Same as L-2302 | RF Plate Choke V-2426, Unit 9 |
| L-2431 | | Same as L-2426 | (22-23) mc Tuning S-2426D, Unit 9 |
| L-2432 | | Same as L-2427 | (27-28) mc Tuning S-2426D, Unit 9 |
| L-2433 | | Same as L-2428 | (32-33) mc Tuning S-2426D, Unit 9 |
| L-2434 | | Same as L-2429 | (37-38) mc Tuning S-2426D, Unit 9 |
| L-2435 | | Same as L-2302 | RF Plate Choke V-2427, Unit 9 |
| L-2436 | | Same as L-2426 | (22-23) mc Tuning S-2426E, Unit 9 |
| L-2437 | | Same as L-2427 | (27-28) mc Tuning S-2426E, Unit 9 |
| L-2438 | | Same as L-2428 | (32-33) mc Tuning S-2426E, Unit 9 |
| L-2439 | | Same as L-2429 | (37-38) mc Tuning S-2426E, Unit 9 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|---|
| L-2440 | | Same as L-2302 | RF Plate Choke V-2428, Unit 9 |
| L-2441 | | Same as L-2426 | (22-23) mc Tuning S-2426F, Unit 9 |
| L-2442 | | Same as L-2427 | (27-28) mc Tuning S-2426F, Unit 9 |
| L-2443 | | Same as L-2428 | (32-33) mc Tuning S-2426F, Unit 9 |
| L-2444 | | Same as L-2429 | (37-38) mc Tuning S-2426F, Unit 9 |
| L-2445 | | Same as L-2302 | RF Plate Choke V-2429, Unit 9 |
| L-2446 | | Same as L-2302 | Spurious Filter, Unit 9 |
| L-2447 thru L-2525 | | Not Used | |
| L-2526 | N16-C-76570-2892 | COIL, RADIO FREQUENCY: 3.1 μ h at 5.0 mc w/o slug, 3.3 μ h to 6.0 μ h w/slug tuning, 1.0 ohms DC resistance; 22 turns no. 38 EF2 AWG copper conductor, single enamel, double polyamide fiber covered conductor, one winding, one pie, universal wound, untapped, unshielded, bakelite form, powdered iron core, coil dimen 1-5/16 in. lg by 21/64 in. diam; o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two solder lug type term, 1 term grounded, located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; no. 12 stamped on coil form; CBTL part/dwg NL-960090-14-12 | 7 mc Tuning S-2526F, Unit 10 |
| L-2527 | N16-C-76559-6401 | COIL, RADIO FREQUENCY: 2.10 μ h at 7.9 mc w/o slug, 2.4 μ h to 4.2 μ h w/slug tuning; 17 turns no. 38 EF AWG copper conductor, single enamel, single polyamide fiber covered conductor, one winding, single layer wound, untapped, unshielded, bakelite form, powdered iron core, coil dimen 1-5/16 in. lg by 21/64 in. diam; o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two solder lug type term located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; no. 6 stamped on coil form; CBTL part/dwg NL-960090-14-6 | 8 mc Tuning S-2526F, Unit 10 |
| L-2528 | N16-C-76530-4083 | COIL, RADIO FREQUENCY: 0.93 μ h at 7.9 mc w/o slug, 1.0 μ h to 1.9 μ h w/slug tuning; 12 turns no. 32 EF2 AWG copper conductor, single enamel, double polyamide fiber covered conductor, one winding, single layer wound, untapped, unshielded, bakelite form, powdered iron core, coil dimen 1-5/16 in. lg by 21/64 in. diam; o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two solder lug type | 13 mc Tuning S-2526F, Unit 10 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|----------------------------------|
| L-2528 (cont) | | term located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; no. 8 stamped on coil form; CBTL part/dwg NL-960090-14-8 | |
| L-2529 | N16-C-76524-3971 | COIL, RADIO FREQUENCY: 0.75 μ h at 12.5 mc w/o slug, 0.8 μ h to 1.4 μ h with slug tuning; 10 turns no. 32 EF2 AWG copper conductor, single enamel, double polyamide fiber covered conductor, one winding, single layer wound, untapped, unshielded, bakelite form, powdered iron core, coil dimen 1-5/16 in. lg by 21/64 in. diam; o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two solder lug type term located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; no. 9 stamped on coil form; CBTL part/dwg NL-960090-14-9 | 14 mc Tuning S-2526F, Unit 10 |
| L-2530 | | Same as L-2426 | 16 mc Tuning S-2526F, Unit 10 |
| L-2531 | | Same as L-2426 | 17 mc Tuning S-2526F, Unit 10 |
| L-2532 | | Same as L-2426 | 18 mc Tuning S-2526F, Unit 10 |
| L-2533 | | Same as L-2426 | 19 mc Tuning S-2526F, Unit 10 |
| L-2534 | | Same as L-2427 | 20 mc Tuning S-2526F, Unit 10 |
| L-2535 | | Same as L-2427 | 21 mc Tuning S-2526F, Unit 10 |
| L-2536 | N16-C-76520-5969 | COIL, RADIO FREQUENCY: 0.31 μ h at 25 mc w/o slug, 0.33 μ h to 0.55 μ h with slug tuning; 7 turns no. 22 EF2 AWG copper conductor, single enamel, double polyamide fiber covered conductor, one winding, single layer wound, untapped, unshielded, bakelite form, powdered iron core, coil dimen 1-5/16 in. lg by 21/64 in. diam; o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two solder lug type term located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; no. 2 stamped on coil form; CBTL part/dwg NL-960090-14-2 | 22 mc Tuning S-2526F, Unit 10 |
| L-2537 | | Same as L-2526 | 7 mc Tuning S-2526E, Unit 10 |
| L-2538 | | Same as L-2527 | 8 mc Tuning S-2526E, Unit 10 |
| L-2539 | | Same as L-2528 | 13 mc Tuning S-2526E, Unit 10 |
| L-2540 | | Same as L-2529 | 14 mc Tuning S-2526E, Unit 10 |
| L-2541 | | Same as L-2426 | 16 mc Tuning S-2526E, Unit 10 |
| L-2542 | | Same as L-2426 | 17 mc Tuning S-2526E, Unit 10 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|----------------------|----------------------------------|
| L-2543 | | Same as L-2426 | 18 mc Tuning S-2526E, Unit 10 |
| L-2544 | | Same as L-2426 | 19 mc Tuning S-2526E, Unit 10 |
| L-2545 | | Same as L-2427 | 20 mc Tuning S-2526E, Unit 10 |
| L-2546 | | Same as L-2427 | 21 mc Tuning S-2526E, Unit 10 |
| L-2547 | | Same as L-2536 | 22 mc Tuning S-2526E, Unit 10 |
| L-2548 | | Same as L-2526 | 7 mc Tuning S-2526D, Unit 10 |
| L-2549 | | Same as L-2527 | 8 mc Tuning S-2526D, Unit 10 |
| L-2550 | | Same as L-2528 | 13 mc Tuning S-2526D, Unit 10 |
| L-2551 | | Same as L-2529 | 14 mc Tuning S-2526D, Unit 10 |
| L-2552 | | Same as L-2426 | 16 mc Tuning S-2526D, Unit 10 |
| L-2553 | | Same as L-2426 | 17 mc Tuning S-2526D, Unit 10 |
| L-2554 | | Same as L-2426 | 18 mc Tuning S-2526D, Unit 10 |
| L-2555 | | Same as L-2426 | 19 mc Tuning S-2526D, Unit 10 |
| L-2556 | | Same as L-2427 | 20 mc Tuning S-2526D, Unit 10 |
| L-2557 | | Same as L-2427 | 21 mc Tuning S-2526D, Unit 10 |
| L-2558 | | Same as L-2536 | 22 mc Tuning S-2526D, Unit 10 |
| L-2559 | | Same as L-2526 | 7 mc Tuning S-2526C, Unit 10 |
| L-2560 | | Same as L-2527 | 8 mc Tuning S-2526C, Unit 10 |
| L-2561 | | Same as L-2528 | 13 mc Tuning S-2526C, Unit 10 |
| L-2562 | | Same as L-2529 | 14 mc Tuning S-2526C, Unit 10 |
| L-2563 | | Same as L-2426 | 16 mc Tuning S-2526C, Unit 10 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|----------------------|----------------------------------|
| L-2564 | | Same as L-2426 | 17 mc Tuning S-2526C, Unit 10 |
| L-2565 | | Same as L-2426 | 18 mc Tuning S-2526C, Unit 10 |
| L-2566 | | Same as L-2426. | 19 mc Tuning S-2526C, Unit 10 |
| L-2567 | | Same as L-2427 | 20 mc Tuning S-2526C, Unit 10 |
| L-2568 | | Same as L-2427 | 21 mc Tuning S-2526C, Unit 10 |
| L-2569 | | Same as L-2536 | 22 mc Tuning S-2526C, Unit 10 |
| L-2570 | | Same as L-2526 | 7 mc Tuning S-2526B, Unit 10 |
| L-2571 | | Same as L-2527 | 8 mc Tuning S-2526B, Unit 10 |
| L-2572 | | Same as L-2528 | 13 mc Tuning S-2526B, Unit 10 |
| L-2573 | | Same as L-2529 | 14 mc Tuning S-2526B, Unit 10 |
| L-2574 | | Same as L-2529 | 16 mc Tuning S-2526B, Unit 10 |
| L-2575 | | Same as L-2426 | 17 mc Tuning S-2526B, Unit 10 |
| L-2576 | | Same as L-2426 | 18 mc Tuning S-2526B, Unit 10 |
| L-2577 | | Same as L-2426 | 19 mc Tuning S-2526B, Unit 10 |
| L-2578 | | Same as L-2427 | 20 mc Tuning S-2526B, Unit 10 |
| L-2579 | | Same as L-2427 | 21 mc Tuning S-2526B, Unit 10 |
| L-2580 | | Same as L-2536 | 22 mc Tuning S-2526B, Unit 10 |
| L-2581 | | Same as L-2302 | Plate Choke V-2526, Unit 10 |
| L-2582 | | Same as L-2302 | Plate Choke V-2527, Unit 10 |
| L-2583 | | Same as L-2302 | Plate Choke V-2528, Unit 10 |
| L-2584 | | Same as L-2302 | Plate Choke V-2529, Unit 10 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|--|
| L-2585 thru L-2625 | | Not Used | |
| L-2626 | | Same as L-2336 | Low Pass Filter V-2627, Unit 11A |
| L-2627 | | Same as L-2336 | Low Pass Filter V-2627, Unit 11A |
| L-2628 | | Same as L-2336 | Low Pass Filter V-2627, Unit 11A |
| L-2629 | | Same as L-2209 | Video Compensa- tion, Unit 11A |
| L-2630 | | Same as L-2209 | Video Compensa- tion, Unit 11A |
| L-2631 thru L-2650 | | Not Used | |
| L-2651 | N16-C-76538-4601 | COIL, RADIO FREQUENCY: 1.25 μ h at 7.9 mc w/o slug, 1.4 μ h to 2.6 μ h w/slug tuning; 15 turns no. 32 EF2 AWG copper conductor, single enamel, double nylon covered, one winding, single layer wound, untapped, unshielded, phenolic coil form, powdered iron core, coil dimen 1-5/16 in. lg by 21/64 in. diam; o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two solder lug type term located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; no. 7 stamped on coil form; CBTL part/dwg NL-960090-14-7 | (10-11) mc Tuning S-2651C, Unit 11B |
| L-2652 | | Same as L-2651 | (11-12) mc Tuning S-2651C, Unit 11B |
| L-2653 | | Same as L-2528 | (12-13) mc Tuning S-2651C, Unit 11B |
| L-2654 | | Same as L-2529 | (13-14) mc Tuning S-2651C, Unit 11B |
| L-2655 | | Same as L-2426 | (14-15) mc Tuning S-2651C, Unit 11B |
| L-2656 | | Same as L-2426 | (15-16) mc Tuning S-2651C, Unit 11B |
| L-2657 | N16-C-76601-1901 | COIL, RADIO FREQUENCY: 5.8 μ h at 5.0 mc w/o slug, 6.1 μ h to 11.5 μ h w/slug tuning, 1.6 ohms DC resistance; 36 turns no. 38 EF AWG copper conductor, single enamel, single polyamide fiber covered conductor, one winding, single layer wound, untapped, unshielded, bakelite form, powdered iron core, o/a coil dimen 1-5/16 in. lg by 21/64 in. diam; o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located one end of coil form; two solder lug type term, 1 term grounded, located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; no. 10 stamped on coil form; CBTL part/dwg NL-960090-14-10 | (6-7) mc Tuning S-2651C, Unit 11B |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--|
| L-2658 | N16-C-76581-2344 | COIL, RADIO FREQUENCY: 4.3 μ h at 5.0 mc w/o slug, 4.5 μ h to 8.6 μ h w/ slug tuning, 1.25 ohms DC resistance; 27 turns no. 38 EF2 AWG copper wire, single enamel, double polyamide fiber covered conductor, one winding, one pie universal wound, untapped, unshielded, bakelite form, powdered iron core, coil dimen 1-5/16 in. lg by 21/64 in. diam; o/a coil form dimen 1-5/16 in. lg by 21/64 in. diam; adjustable tuning, adjustable iron slug, screwdriver adjustment located at one end of coil form; two solder lug type term, 1 term grounded, located outside coil form; one no. 10-32 thd mtg bushing 1/4 in. lg; CBTL part/dwg NL-960090-14-13 | (7-8) mc Tuning S-2651C, Unit 11B |
| L-2659 | | Same as L-2526 | (8-9) mc Tuning S-2651C, Unit 11B |
| L-2660 | | Same as L-2527 | (9-10) mc Tuning S-2651C, Unit 11B |
| L-2661 | | Same as L-2651 | (10-11) mc Tuning S-2651D, Unit 11B |
| L-2662 | | Same as L-2651 | (11-12) mc Tuning S-2651D, Unit 11B |
| L-2663 | | Same as L-2528 | (12-13) mc Tuning S-2651D, Unit 11B |
| L-2664 | | Same as L-2529 | (13-14) mc Tuning S-2651D, Unit 11B |
| L-2665 | | Same as L-2426 | (14-15) mc Tuning S-2651D, Unit 11B |
| L-2666 | | Same as L-2426 | (15-16) mc Tuning S-2651D, Unit 11B |
| L-2667 | | Same as L-2657 | (6-7) mc Tuning S-2651D, Unit 11B |
| L-2668 | | Same as L-2658 | (7-8) mc Tuning S-2651D, Unit 11B |
| L-2669 | | Same as L-2526 | (8-9) mc Tuning S-2651D, Unit 11B |
| L-2670 | | Same as L-2527 | (9-10) mc Tuning S-2651D, Unit 11B |
| L-2671 | | Same as L-2302 | Plate Choke V-2651, Unit 11B |
| L-2672 | | Same as L-2302 | Plate Choke V-2652, Unit 11B |
| L-2673 | | Same as L-2302 | Plate Choke V-2653, Unit 11B |
| L-2674 | | Same as L-2302 | Plate Choke V-2654, Unit 11B |
| L-2675 | | Same as L-2651 | (10-11) mc Tuning S-2651E, Unit 11B |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|----------------------|--|
| L-2676 | | Same as L-2651 | (11-12) mc Tuning S-2651E, Unit 11B |
| L-2677 | | Same as L-2528 | (12-13) mc Tuning S-2651E, Unit 11B |
| L-2678 | | Same as L-2529 | (13-14) mc Tuning S-2651E, Unit 11B |
| L-2679 | | Same as L-2426 | (14-15) mc Tuning S-2651E, Unit 11B |
| L-2680 | | Same as L-2426 | (15-16) mc Tuning S-2651E, Unit 11B |
| L-2681 | | Same as L-2657 | (6-7) mc Tuning S-2651E, Unit 11B |
| L-2682 | | Same as L-2658 | (7-8) mc Tuning S-2651E, Unit 11B |
| L-2683 | | Same as L-2526 | (8-9) mc Tuning S-2651E, Unit 11B |
| L-2684 | | Same as L-2527 | (9-10) mc Tuning S-2651E, Unit 11B |
| L-2685 | | Same as L-2651 | (10-11) mc Tuning S-2651F, Unit 11B |
| L-2686 | | Same as L-2651 | (11-12) mc Tuning S-2651F, Unit 11B |
| L-2687 | | Same as L-2528 | (12-13) mc Tuning S-2651F, Unit 11B |
| L-2688 | | Same as L-2529 | (13-14) mc Tuning S-2651F, Unit 11B |
| L-2689 | | Same as L-2426 | (14-15) mc Tuning S-2651F, Unit 11B |
| L-2690 | | Same as L-2426 | (15-16) mc Tuning S-2651F, Unit 11B |
| L-2691 | | Same as L-2657 | (6-7) mc Tuning S-2651F, Unit 11B |
| L-2692 | | Same as L-2658 | (7-8) mc Tuning S-2651F, Unit 11B |
| L-2693 | | Same as L-2526 | (8-9) mc Tuning S-2651F, Unit 11B |
| L-2694 | | Same as L-2527 | (9-10) mc Tuning S-2651F, Unit 11B |
| L-2695 thru L-2800 | | Not Used | |
| L-2801 | | Same as L-2426 | (20-21) mc Tuning S-2801B, Unit 11C |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|----------------------|--|
| L-2802 | | Same as L-2426 | (21-22) mc Tuning S-2801B, Unit 11C |
| L-2803 | | Same as L-2426 | (22-23) mc Tuning S-2801B, Unit 11C |
| L-2804 | | Same as L-2427 | (23-24) mc Tuning S-2801B, Unit 11C |
| L-2805 | | Same as L-2427 | (24-25) mc Tuning S-2801B, Unit 11C |
| L-2806 | | Same as L-2536 | (25-26) mc Tuning S-2801B, Unit 11C |
| L-2807 | | Same as L-2528 | (16-17) mc Tuning S-2801B, Unit 11C |
| L-2808 | | Same as L-2529 | (17-18) mc Tuning S-2801B, Unit 11C |
| L-2809 | | Same as L-2529 | (18-19) mc Tuning S-2801B, Unit 11C |
| L-2810 | | Same as L-2529 | (19-20) mc Tuning S-2801B, Unit 11C |
| L-2811 | | Same as L-2426 | (20-21) mc Tuning S-2801C, Unit 11C |
| L-2812 | | Same as L-2426 | (21-22) mc Tuning S-2801C, Unit 11C |
| L-2813 | | Same as L-2426 | (22-23) mc Tuning S-2801C, Unit 11C |
| L-2814 | | Same as L-2427 | (23-24) mc Tuning S-2801C, Unit 11C |
| L-2815 | | Same as L-2427 | (24-25) mc Tuning S-2801C, Unit 11C |
| L-2816 | | Same as L-2536 | (25-26) mc Tuning S-2801C, Unit 11C |
| L-2817 | | Same as L-2528 | (16-17) mc Tuning S-2801C, Unit 11C |
| L-2818 | | Same as L-2529 | (17-18) mc Tuning S-2801C, Unit 11C |
| L-2819 | | Same as L-2529 | (18-19) mc Tuning S-2801C, Unit 11C |
| L-2820 | | Same as L-2529 | (19-20) mc Tuning S-2801C, Unit 11C |
| L-2821 | | Same as L-2302 | RF Plate Choke V-2801, Unit 11C |
| L-2822 | | Same as L-2302 | RF Plate Choke V-2802, Unit 11C |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|----------------------|--|
| L-2823 | | Same as L-2302 | RF Plate Choke V-2803, Unit 11C |
| L-2824 | | Same as L-2302 | RF Plate Choke V-2804, Unit 11C |
| L-2825 | | Same as L-2427 | (24-25) mc Tuning S-2801D, Unit 11C |
| L-2826 | | Same as L-2536 | (25-26) mc Tuning S-2801D, Unit 11C |
| L-2827 | | Same as L-2528 | (16-17) mc Tuning S-2801D, Unit 11C |
| L-2828 | | Same as L-2528 | (17-18) mc Tuning S-2801D, Unit 11C |
| L-2829 | | Same as L-2529 | (18-19) mc Tuning S-2801D, Unit 11C |
| L-2830 | | Same as L-2529 | (19-20) mc Tuning S-2801D, Unit 11C |
| L-2831 | | Same as L-2426 | (20-21) mc Tuning S-2801E, Unit 11C |
| L-2832 | | Same as L-2426 | (21-22) mc Tuning S-2801E, Unit 11C |
| L-2833 | | Same as L-2426 | (22-23) mc Tuning S-2801E, Unit 11C |
| L-2834 | | Same as L-2427 | (23-24) mc Tuning S-2801E, Unit 11C |
| L-2835 | | Same as L-2427 | (24-25) mc Tuning S-2801E, Unit 11C |
| L-2836 | | Same as L-2536 | (25-26) mc Tuning S-2801E, Unit 11C |
| L-2837 | | Same as L-2528 | (16-17) mc Tuning S-2801E, Unit 11C |
| L-2838 | | Same as L-2528 | (17-18) mc Tuning S-2801E, Unit 11C |
| L-2839 | | Same as L-2529 | (18-19) mc Tuning S-2801E, Unit 11C |
| L-2840 | | Same as L-2529 | (19-20) mc Tuning S-2801E, Unit 11C |
| L-2841 | | Same as L-2426 | (20-21) mc Tuning S-2801D, Unit 11C |
| L-2842 | | Same as L-2426 | (21-22) mc Tuning S-2801D, Unit 11C |
| L-2843 | | Same as L-2426 | (22-23) mc Tuning S-2801D, Unit 11C |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|--|
| L-2844 | | Same as L-2427 | (23-24) mc Tuning S-2601D, Unit 11C |
| L-2845 | | Same as L-2658 | 20 mc Trap S-2801B, Unit 11C |
| L-2846 | | Same as L-2658 | 20 mc Trap S-2801C, Unit 11C |
| N-2916 | Low Failure Item | CARD, dial number: aluminum, black w/white characters spaced 60° apart; 0.064 in. thk by 2-1/4 in. diam w/0.4370 in. diam hole; numerals equally spaced in CCW direction; CBTL part/dwg NL-900622-1 | For S-2996 "FF" |
| N-2917 | Low Failure Item | CARD, dial number: aluminum, black w/white characters spaced 60° apart; 0.064 in. thk by 2-1/4 in. diam w/0.4370 in. diam hole; numerals 0 to 3 incl reading CCW; CBTL part/dwg NL-900621-1 | Freq Selection "AA" |
| N-2918 | Low Failure Item | CARD, dial number: aluminum, black w/white characters spaced 30° apart; 0.064 in. thk by 2-1/4 in. diam w/0.4370 in. diam hole; numerals reading CCW from 0 to 10 incl; CBTL part/dwg NL-900620-1 | Freq Selection "BB" |
| N-2918.1 | | Same as N-2918 | 10 cps Indicator "EE" |
| N-2919 | Low Failure Item | CARD, dial number: aluminum; black w/white characters spaced 30° apart; 0.064 in. thk by 2-1/4 in. diam w/0.4370 in. diam hole; numerals 0 to 9 incl reading CCW; CBTL part/dwg NL-900635-1 | 100 cps Indicator "DD" |
| N-2919.1 | | Same as N-2919 | kc Indicator "CC" |
| N-2919.2 | | Same as N-2919 | 10 kc Indicator "JJ" |
| N-2919.3 | | Same as N-2919 | 100 kc Indicator "HH" |
| N-2919.4 | | Same as N-2919 | mc Indicator "GG" |
| O-2001 | N16-S-34520-3864 | SHIELD, ELECTRON TUBE: brass, nickel pl; cylindrical shape; 1-3/8 in. lg, 0.958 in. diam o/a dimen; bayonet mtg; per spec JAN-S-28A; JAN type TS102U01; same as O-1001 | u/w XV-2001, Unit 1 |
| O-2002 | N16-S-34576-6514 | SHIELD, ELECTRON TUBE: brass, nickel pl; cylindrical shape; 1-15/16 in. lg; 1.093 in. diam o/a dimen; bayonet mtg; per spec JAN-S-28A; JAN type TS103U02; same as O-1002 | u/w XV-2002, Unit 1 |
| O-2003 | | Same as O-2002 | u/w XV-2003, Unit 1 |
| O-2004 thru O-2030 | | Not Used | |
| O-2031 | | Same as O-2001 | u/w XV-2031, Unit 2 |
| O-2032 | | Same as O-2001 | u/w XV-2032, Unit 2 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|-------------------------------|---|---|-----------------------------------|
| O-2033 | | Same as O-2002 | u/w XV-2033, Unit 2 |
| O-2034 | | Same as O-2002 | u/w XV-2034, Unit 2 |
| O-2035 thru O-2050 | | Not Used | |
| O-2051 | N16-S-34557-8350 | SHIELD, ELECTRON TUBE: brass, nickel pl; cylindrical shape; 1-3/4 in. lg, 0.958 in. diam o/a dimen; bayonet mtg; per spec JAN-S-28A; JAN type TS102U02; same as O-1012 | u/w XV-2051, Unit 3 |
| O-2052 | N16-C-600701-220 | CORE, ADJUSTABLE TUNING: D1-silicone treated core; cad pl insert, no. 6-32 thd 1-1/2 in. lg; slotted both ends; 1-13/16 in. lg, 0.312 in. diam o/a; CBTL part/dwg NL-960073-1 | p/o S-2051 Tuning Assy, Unit 3 |
| O-2052.1 thru O-2052.10 | | Same as O-2052 | p/o S-2051 Tuning Assy, Unit 3 |
| O-2053 | N17-S-46773-5555 | SPRING, DETENT: flat type; phosphor bronze, cad pl; 1-7/8 in. lg, 3/4 in. wd, 0.1264 in. thk o/a dimen; two 0.197 in. diam mtg holes spaced 1-9/16 in. c to c; one 0.263 in. diam center hole clears switch shaft, two 0.120 in. diam holes spaced 9/16 in. c to c for mtg detent balls; CCCY part/dwg A-4089 | u/w S-2051, Unit 3 |
| O-2053.1 | | Same as O-2053 | u/w S-2052, Unit 3 |
| O-2053.2 | | Same as O-2053 | u/w S-2053, Unit 3 |
| O-2054 | Low Failure Item | DETENT: steel, cad pl, 12 position, 3/4 in. diam, 1/4 in. lg, 3/16 in. wd slot, clears shaft; CCCY type A-4262P | u/w S-2051, Unit 3 |
| O-2054.1 | | Same as O-2054 | u/w S-2052, Unit 3 |
| O-2054.2 | | Same as O-2054 | u/w S-2053, Unit 3 |
| O-2055 | N17-C-99999-1190 | COUPLING, SHAFT, RIGID: straight bore; brass, cad pl; 1 in. OD, 7/16 in. lg o/a; 1/4 in. by 1/8 in. key across diam; 0.250 in. by 0.187 in. axial mtg slot indexed 0°; 5/16 in. diam by 1/8 in. deep counterbore; two no. 6-32 NC-2 tapped holes through one wall only, spaced 90°; red dot at one end of key; CBTL part/dwg NL-962304-1 | u/w S-2052, Unit 3 |
| O-2055.1 | | Same as O-2055 | u/w S-2053, Unit 3 |
| O-2056 | N17-C-98436-9495 | COUPLING, SHAFT, RIGID: brass, cad pl; 1 in. OD by 7/16 in. lg o/a; 1/8 in. by 1/4 in. key across diam; straight bore; 0.250 in. by 0.187 in. axial mtg slot indexed 30°; 5/16 in. diam by 1/8 in. deep counterbore; two no. 6-32 NC-2 tapped holes through one wall only, spaced 90°; red dot at one end of key; CBTL part/dwg NL-900691-1 | u/w S-2051, Unit 3 |
| O-2057 thru O-2100 | | Not Used | |
| O-2101 | | Same as O-2001 | u/w XV-2101, Unit 4 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|-------------------------|
| O-2102 | | Same as O-2001 | u/w XV-2102, Unit 4 |
| O-2103 thru O-2125 | | Not Used | |
| O-2126 | | Same as O-2051 | u/w XV-2126, Unit 12 |
| O-2127 | Low Failure Item | SHIELD, ELECTRON TUBE: brass, cad pl; cylindrical shape; 1-5/16 in. lg, 1-1/8 in. diam; 1 in. -20 extra fine thd mtg; CBTL part/dwg NL-960344-1 | u/w XV-2127, Unit 12 |
| O-2128 | | Same as O-2051 | u/w XV-2128, Unit 12 |
| O-2129 thru O-2150 | | Not Used | |
| O-2151 | | Same as O-2001 | u/w XV-2151, Unit 5 |
| O-2152 | | Same as O-2001 | u/w XV-2152, Unit 5 |
| O-2153 | | Same as O-2001 | u/w XV-2153, Unit 5 |
| O-2154 | | Same as O-2001 | u/w XV-2154, Unit 5 |
| O-2155 thru O-2200 | | Not Used | |
| O-2201 | | Same as O-2001 | u/w XV-2201, Unit 6 |
| O-2202 | | Same as O-2002 | u/w XV-2202, Unit 6 |
| O-2203 | | Same as O-2001 | u/w XV-2203, Unit 6 |
| O-2204 | | Same as O-2001 | u/w XV-2204, Unit 6 |
| O-2205 | | Same as O-2051 | u/w XV-2205, Unit 6 |
| O-2206 | | Same as O-2001 | u/w XV-2206, Unit 6 |
| O-2207 | | Same as O-2001 | u/w XV-2207, Unit 6 |
| O-2208 | | Same as O-2001 | u/w XV-2208, Unit 6 |
| O-2209 | | Same as O-2001 | u/w XV-2209, Unit 6 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|------------------------|
| O-2210 | N17-C-99999-1189 | COUPLING, SHAFT, FLEXIBLE: female; straight bore; brass, cad pl; 1 in. OD by 9/16 in. lg o/a; incl floating coupling; 1/8 in. by 1/4 in. keyway across diam; 0.250 in. by 0.187 in. axial mtg slot indexed 30°; two no. 6-32 NC-2 tapped holes through one wall only, spaced 90°; red dot at one end of keyway; CBTL part/dwg NL-900094-1 | u/w S-2201, Unit 6 |
| O-2211 | | Same as O-2053 | u/w S-2201, Unit 6 |
| O-2212 | | Same as O-2054 | u/w S-2201, Unit 6 |
| O-2213 thru O-2300 | | Not Used | |
| O-2301 | | Same as O-2001 | u/w XV-2301, Unit 7 |
| O-2302 | | Same as O-2001 | u/w XV-2302, Unit 7 |
| O-2303 | | Same as O-2001 | u/w XV-2303, Unit 7 |
| O-2304 | | Same as O-2001 | u/w XV-2304, Unit 7 |
| O-2305 thru O-2325 | | Not Used | |
| O-2326 | | Same as O-2002 | u/w XV-2326, Unit 8 |
| O-2327 | | Same as O-2001 | u/w XV-2327, Unit 8 |
| O-2328 | | Same as O-2001 | u/w XV-2328, Unit 8 |
| O-2329 | | Same as O-2051 | u/w XV-2329, Unit 8 |
| O-2330 | | Same as O-2001 | u/w XV-2330, Unit 8 |
| O-2331 | | Same as O-2001 | u/w XV-2331, Unit 8 |
| O-2332 | | Same as O-2001 | u/w XV-2332, Unit 8 |
| O-2333 | | Same as O-2001 | u/w XV-2333, Unit 8 |
| O-2334 | | Same as O-2051 | u/w XV-2334, Unit 8 |
| O-2335 | | Same as O-2053 | u/w S-2326, Unit 8 |
| O-2336 | | Same as O-2054 | u/w S-2326, Unit 8 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------|---|---|------------------------------------|
| O-2337 | N17-C-98436-8599 | COUPLING, SHAFT, RIGID: brass, cad pl; 1 in. OD by 9/16 in. lg o/a; straight bore; 1/4 in. by 1/4 in. keyway off center across diam; 0.250 in. by 0.187 in. axial mtg slot indexed 45°; 5/16 in. diam by 1/4 in. deep counterbore; two no. 6-32 tapped holes through one wall only, spaced 90°; CBTL part/dwg NL-960199-1 | p/o S-2326 Switch Drive, Unit 8 |
| O-2338 thru O-2425 | | Not Used | |
| O-2426 | | Same as O-2001 | u/w XV-2426, Unit 9 |
| O-2427 | | Same as O-2001 | u/w XV-2427, Unit 9 |
| O-2428 | | Same as O-2001 | u/w XV-2428, Unit 9 |
| O-2429 | | Same as O-2051 | u/w XV-2429, Unit 9 |
| O-2430 | Low Failure Item | BEARING, sleeve: porous bronze; flange type; 3/8 in. OD, 1/4 in. ID, 1/4 in. lg, flange is 0.481 in. OD, 3/64 in. thk; CBH part no. FB-46-2 | p/o Support for Drive Assy, Unit 9 |
| O-2430.1 | | Same as O-2430 | p/o Support for Drive Assy, Unit 9 |
| O-2430.2 | | Same as O-2430 | p/o Support for Drive Assy, Unit 9 |
| O-2430.3 | | Same as O-2430 | p/o Support for Drive Assy, Unit 9 |
| O-2431 | Low Failure Item | SPROCKET, chain: brass, nickel pl; round w/19 teeth; 0.972 in. OD, 3/8 in. wd o/a dimen; hub 1/2 in. diam, 1/4 in. projection; 0.250 in. diam center hole; two no. 6-32 tapped holes 90° apart; CBKH type 9100-19 modified per CBTL part/dwg NL-900223-1 | p/o Drive Assy for S-2427, Unit 9 |
| O-2431.1 | | Same as O-2431 | p/o Drive Assy for S-2427, Unit 9 |
| O-2432 | | Same as O-2210 | p/o S-2427 Switch Drive, Unit 9 |
| O-2433 | N17-C-99999-1187 | COUPLING, SHAFT, FLEXIBLE: female; straight bore, brass, cad pl; 1 in. OD by 9/16 in. lg o/a; incl floating coupling; 1/8 in. by 1/4 in. keyway across diam; 0.250 in. by 0.187 in. axial mtg slot indexed 75°; two no. 6-32 NC-2 tapped holes through one wall only, spaced 90°; red dot at one end of keyway; CBTL part/dwg NL-900697-1 | p/o S-2426 Switch Drive, Unit 9 |
| O-2434 | Low Failure Item | PIN, clevis: stainless steel; no dimen of this item is greater than one in.; disconnect pin of CBKH series 75-SS mechanical chain; same as O-1353 | Used to Join Ends of Chain Assy |
| O-2435 | Low Failure Item | RING, bearing: stainless steel; no dimen of this item is greater than one in.; tubular pin of CBKH series 75-SS mechanical chain; same as O-1354 | u/w Chain Assy |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|--|
| O-2436 | Low Failure Item | RING, RETAINING: stainless steel; no dimen of this item is greater than one in; keeper of CBKH series 75-SS mechanical chain; same as O-1355 | u/w Chain Assy |
| O-2437 | N17-D-905001-107 | IDLER ASSEMBLY: c/o block, shaft, and sprocket; block, stainless steel, 5/8 in. lg, 3/8 in. wd, 1/8 in. h o/a; one no. 6-32 NC-2 tap and one 0.093 in. diam hole 3/8 in. c to c; shaft, stainless steel, 41/64 in. lg, 3/16 in. diam o/a; CBKH sprocket, brass, 0.395 in. OD, 13/64 in. diam hub extends 1/4 in., 0.125 in. diam bore, 7 teeth; mtd by no. 6-32 tap hole in block; CBTL part/dwg NL-900233-1 | p/o Freq. Converter Drive Assy, Unit 9 |
| O-2438 thru O-2525 | | Not Used | |
| O-2526 | | Same as O-2001 | u/w XV-2526, Unit 10 |
| O-2527 | | Same as O-2001 | u/w XV-2527, Unit 10 |
| O-2528 | | Same as O-2001 | u/w XV-2528, Unit 10 |
| O-2529 | | Same as O-2001 | u/w XV-2529, Unit 10 |
| O-2530 | | Same as O-2054 | u/w S-2526, Unit 10 |
| O-2531 | | Same as O-2210 | p/o S-2526 Switch Drive, Unit 10 |
| O-2531.1 | | Same as O-2210 | p/o S-2426 Switch Drive, Unit 10 |
| O-2531.2 | | Same as O-2210 | p/o S-2427 Switch Drive, Unit 10 |
| O-2532 | N17-C-99999-1194 | COUPLING, SHAFT, RIGID: brass, cad pl; 1 in. OD by 7/16 in. lg o/a; straight bore; 1/8 in. by 1/4 in. key across diam; 0.250 in. by 0.187 in. axial mtg slot indexed 60°, 5/16 in. diam by 1/8 in. deep counterbore; two no. 6-32 NC-2 tapped holes through one wall only, spaced 90°; red dot at one end of key; CBTL part/dwg NL-900692-1 | p/o S-2426 Switch Drive, Unit 10 |
| O-2532.1 | | Same as O-2532 | S-2427 Switch Drive, Unit 10 |
| O-2533 | | Same as O-2053 | u/w S-2427, Unit 10 |
| O-2534 thru O-2625 | | Not Used | |
| O-2626 | | Same as O-2001 | u/w XV-2626, Unit 11A |
| O-2627 | | Same as O-2001 | u/w XV-2627, Unit 11A |
| O-2628 | | Same as O-2001 | u/w XV-2628, Unit 11A |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------|---|--|-----------------------------------|
| O-2629 | For Replacement Use N16-S-34576-6514 | SHIELD, ELECTRON TUBE: brass, ferro black finish; cylindrical shape; 1-15/16 in. lg, 1.093 in. diam o/a dimen; bayonet mtg; w/eight heat dissipating vents, each 1/8 in. wd by 100° along the periphery of the tube shield, four spaced 1/4 in. c to c and four 180° opposite; per spec JAN-S-28A; JAN type TS103U02 modified; CBTL part/dwg NL-901546-1 | u/w XV-2629, Unit 11A |
| O-2630 thru O-2650 | | Not Used | |
| O-2651 | | Same as O-2001 | u/w XV-2651, Unit 11B |
| O-2652 | | Same as O-2001 | u/w XV-2652, Unit 11B |
| O-2653 | | Same as O-2001 | u/w XV-2653, Unit 11B |
| O-2654 | | Same as O-2051 | u/w XV-2654, Unit 11B |
| O-2655 | | Same as O-2054 | u/w S-2651, Unit 11B |
| O-2655.1 | | Same as O-2054 | u/w S-2652, Unit 11B |
| O-2656 | | Same as O-2053 | u/w S-2651, Unit 11B |
| O-2656.1 | | Same as O-2053 | u/w S-2652, Unit 11B |
| O-2657 | N17-C-99999-1193 | COUPLING, SHAFT, FLEXIBLE: female; straight bore; brass, cad pl; 1 in. OD by 9/16 in. lg o/a; incl floating coupling, 1/8 in. by 1/4 in. keyway across diam; 0.250 in. by 0.187 in. axial mtg slot indexed 45°; two no. 6-32 NC-2 tapped holes through one wall only, spaced 90°; red dot at one end of keyway; CBTL part/dwg NL-900695-1 | p/o S-2651 Switch Drive, Unit 11B |
| O-2658 | N17-C-98436-8983 | COUPLING, SHAFT, RIGID: brass, cad pl; 1 in. OD by 7/16 in. lg o/a; 1/8 in. by 1/4 in. key across diam; 0.250 in. by 0.187 in. axial mtg slot indexed 45°; 5/16 in. diam by 1/8 in. deep counterbore; two no. 6-32 NC-2 tapped holes through one wall only, spaced 90°; red dot at one end of key; CBTL part/dwg NL-900693-1 | p/o S-2801 Switch Drive, Unit 11B |
| O-2659 | | Same as O-2532 | p/o S-2802 Switch Drive, Unit 11B |
| O-2660 | | Same as O-2210 | p/o S-2652 Switch Drive, Unit 11B |
| O-2661 thru O-2800 | | Not Used | |
| O-2801 | | Same as O-2001 | u/w XV-2801, Unit 11C |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|---------------------------------|---|---|--------------------------------------|
| O-2802 | | Same as O-2001 | u/w XV-2802, Unit 11C |
| O-2803 | | Same as O-2001 | u/w XV-2803, Unit 11C |
| O-2804 | | Same as O-2051 | u/w XV-2804, Unit 11C |
| O-2805 | | Same as O-2053 | u/w S-2801, Unit 11C |
| O-2805. 1 | | Same as O-2053 | u/w S-2802, Unit 11C |
| O-2806 | | Same as O-2054 | u/w S-2801, Unit 11C |
| O-2806. 1 | | Same as O-2054 | u/w S-2802, Unit 11C |
| O-2807 | | Same as O-2657 | p/o S-2801 Switch Drive, Unit 11C |
| O-2808 | | Same as O-2210 | p/o S-2802 Switch Drive, Unit 11C |
| O-2809 thru O-2915 | | Not Used | |
| O-2916 | | Same as O-2430 | Shaft Bearings |
| O-2916. 1 thru O-2916. 34 | | Same as O-2430 | Shaft Bearings |
| O-2917 | N16-R-99999-0858 | RING, RETAINING: beryllium copper, Berylco no. 25, plain, iridite dip; external; for 5/32 in. diam shaft; face diam 0.142 in. by 0.010 in. thk; installed by means of special pliers no. 0015; CCDE Truarc part no. 5100-15-CMI | Retaining Ring |
| O-2917. 1 | | Same as O-2917 | Retaining Ring |
| O-2917. 2 | | Same as O-2917 | Retaining Ring |
| O-2917. 3 | | Same as O-2917 | Retaining Ring |
| O-2918 | | Same as O-2210 | p/o S-2053 Switch Drive |
| O-2918. 1 | | Same as O-2210 | p/o S-2052 Switch Drive |
| O-2918. 2 | | Same as O-2210 | p/o S-2051 Switch Drive |
| O-2918. 3 | | Same as O-2210 | p/o S-2996 Switch Drive |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|-------------------------|
| O-2919 | N17-C-98436-8727 | COUPLING, SHAFT, RIGID: brass, cad pl; 1 in. OD by 7/16 in. lg o/a; straight bore; 1/8 in. by 1/4 in. key across diam; 0.250 in. diam hole through center for shaft opening; 5/16 in. diam by 1/8 in. deep counterbore; two no. 6-32 NC-2 tapped holes through one wall only, spaced 90°; red dot at one end of key; CBTL part/dwg NL-900766-1 | p/o S-2201 Switch Drive |
| O-2919.1 | | Same as O-2919 | p/o S-2652 Switch Drive |
| O-2919.2 | | Same as O-2919 | p/o S-2651 Switch Drive |
| O-2919.3 | | Same as O-2919 | p/o S-2996 Switch Drive |
| O-2919.4 | | Same as O-2919 | p/o S-2426 Switch Drive |
| O-2919.5 | | Same as O-2919 | p/o S-2526 Switch Drive |
| O-2919.6 | | Same as O-2919 | p/o S-2427 Switch Drive |
| O-2920 | N17-C-98436-9187 | COUPLING, SHAFT, RIGID: brass, cad pl; 1 in. OD by 9/16 in. lg o/a; straight bore; 1/4 in. by 1/4 in. key off center across diam; 0.250 in. diam hole through center for shaft opening; two no. 6-32 tapped holes through one wall only; spaced 90°; CBTL part/dwg NL-900652-1 | p/o S-2326 Switch Drive |
| O-2921 | Low Failure Item | SPROCKET ASSEMBLY, CHAIN: c/o two CBKH type 24-tooth sprockets modified w/hubs press-fitted together; brass, nickel pl; round, approximate o/a dimen 1.209 in. OD by 1/2 in. wd; outer hub 9/16 in. OD with 3/16 in. projection; 1/4 in. diam shaft hole; one 5/64 in. diam hole thru 1 wall of both hubs for pin mtg; CBKH type 9100-24 modified; CBTL part/dwg NL-900648-1 | p/o S-2326 Switch Drive |
| O-2922 | Low Failure Item | IDLER ASSEMBLY: c/o corrosion resisting steel idler arm and idler shaft, and CBKH 12-tooth sprocket; approximate o/a dimen 1-1/8 in. lg, 3/4 in. wd, 41/64 in. h; mtd by means of 0.257 in. diam hole and two no. 6-32 NC-2 tapped holes 120° apart; CBTL part/dwg NL-900616-1 | Adjustable Chain Idler |
| O-2922.1 | | Same as O-2922 | Adjustable Chain Idler |
| O-2922.2 | | Same as O-2922 | Adjustable Chain Idler |
| O-2922.3 | | Same as O-2922 | Adjustable Chain Idler |
| O-2922.4 | | Same as O-2922 | Adjustable Chain Idler |
| O-2922.5 | | Same as O-2922 | Adjustable Chain Idler |
| O-2922.6 | | Same as O-2922 | Adjustable Chain Idler |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------------|---|--|--|
| O-2923 | Procured on demand by nearest Naval Shore Supply Activity | RETAINER, bearing: upper; c/o rectangular, corrosion, resisting steel, electropolish finish, ball spacer w/twelve 0.125 in. diam stainless steel balls, self-retained; 11.344 in. lg, 1/4 in. wd, 0.125 in. thk o/a dimen; CCCS dwg no. A-9019.9-1 (Revision no. 3); p/o H-2921; same as O-506 | p/o Chassis Slide |
| O-2923.1 | | Same as O-2923; p/o H-2922 | p/o Chassis Slide |
| O-2924 | Low Failure Item | SPRING: helical compression type; 0.032 in. diam music wire per NAVY spec 22W11C; 3/8 in. h, 1/2 in. diam o/a; 3-1/2 turns, RH or LH wound; first and last 3/4 turns are flat; cad pl; CBTL part/dwg NL-900018-1; u/w H-2921; same as O-507 | Stop Button Spring for Chassis Slide |
| O-2924.1 | | Same as O-2924; u/w H-2922 | Stop Button Spring for Chassis Slide |
| O-2925 | Procured on demand by nearest Naval Shore Supply Activity | RETAINER, bearing: lower; c/o rectangular, corrosion resisting steel, electropolish finish, ball spacer w/twelve 0.125 in. diam stainless steel balls, self-retained; 10.844 in. lg, 1/4 in. wd, 0.125 in. thk o/a dimen; CCCS dwg no. A-9019.9-2 (Revision no. 3); p/o H-2921; same as O-508 | p/o Chassis Slide |
| O-2925.1 | | Same as O-2925; p/o H-2922 | p/o Chassis Slide |
| O-2926 | Low Failure Item | DETENT: steel, cad pl; 6 position; 3/4 in. diam, 1/4 in. lg by 3/16 in. wd slot, clears shaft; CCCY type A-30510P | u/w S-2996 |
| O-2927 | Low Failure Item | SPRING: helical compression type, for spring loading tube socket, 0.032 in. diam spring steel; 7/32 in. ID by 2 in. lg o/a; 0.062 in. pitch; squared ends, ground; CBTL part/dwg NL-900780-1 | Position V-2917 |
| O-2927.1 | | Same as O-2927 | Position V-2917 |
| O-2928 | N17-C-200982-301 | CAP, ELECTRICAL CONNECTOR: brass, silver pl; 9/16 in. diam by 5/8 in. lg; mtd w/chain approx 2-1/4 in. lg with mtg hole at end of chain; used as a protective cover for type BNC female connector; type CW-123A/U; CARO no. 1500 | Protective Cover for J-2931 |
| O-2928.1 thru O-2928.5 | | Same as O-2928 | Protective Covers for J-2929, J-2930, J-2932, J-2933, J-2934 |
| O-2929 | Low Failure Item | SPROCKET, chain: brass, nickel pl; round, w/12 teeth; o/a dimen 0.639 in. OD by 3/8 in. wd; hub 3/8 in. diam 1/4 in. projection; shaft hole in center 0.156 in. diam; CBKH type 9100-12 modified; CBTL part/dwg NL-900610-1 | Chain Drive |
| O-2929.1 | | Same as O-2929 | Chain Drive |
| O-2930 | Low Failure Item | SPROCKET, chain: brass, nickel pl; round w/24 teeth; o/a dimen 1.209 in. OD by 7/16 in. wd; hub 9/16 in. diam 5/16 in. projection; one 0.078 in. diam hole drilled thru 1 wall for mtg w/pin; shaft hole in center 0.251 in. diam; CBKH type 9100-24 modified; CBTL part/dwg NL-900628-1 | Chain Drive |
| O-2930.1 | | Same as O-2930 | Chain Drive |
| O-2930.2 | | Same as O-2930 | Chain Drive |
| O-2930.3 | | Same as O-2930 | Chain Drive |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|-------------------------|---|--|---------------------------------|
| O-2930.4 | | Same as O-2930 | Chain Drive |
| O-2930.5 | | Same as O-2930 | Chain Drive |
| O-2930.6 | | Same as O-2930 | Chain Drive |
| O-2930.7 | | Same as O-2930 | Chain Drive |
| O-2930.8 | | Same as O-2930 | Chain Drive |
| O-2930.9 | | Same as O-2930 | Chain Drive |
| O-2930.10 | | Same as O-2930 | Chain Drive |
| O-2930.11 | | Same as O-2930 | Chain Drive |
| O-2930.12 | | Same as O-2930 | Chain Drive |
| O-2931 | | Same as O-2053 | u/w S-2996 |
| O-2932 | N16-R-99999-0865 | RING, RETAINING: steel, SAE 1060-1090, plain, iridite dip; external, for 1/4 in. diam shaft, ID 0.225 in., 0.025 in. thk; installed by means of special pliers no. 2; CCDE Truarc part no. 5100-25-SMI; same as O-1338 | Retaining Ring |
| O-2932.1 thru O-2932.19 | | Same as O-2932 | Retaining Rings |
| O-2933 | | Same as O-2436 | Used to Join Ends of Chain Assy |
| O-2933.1 thru O-2933.6 | | Same as O-2436 | Used to Join Ends of Chain Assy |
| O-2934 | | Same as O-2435 | u/w Chain Assy |
| O-2934.1 thru O-2934.6 | | Same as O-2435 | u/w Chain Assy |
| O-2935 | | Same as O-2434 | Used to Join Ends of Chain Assy |
| O-2935.1 thru O-2935.6 | | Same as O-2434 | Used to Join Ends of Chain Assy |
| O-2936 | Low Failure Item | SPRING: loop type; for latch; 0.038 in. diam corrosion resisting steel spring wire; 2-1/2 in. lg, 11/16 in. h o/a; one end semi-hook type, one end open; irregular shape; CBTL part/dwg NL-900991-1; p/o H-2921; same as O-509 | For Latch in Chassis Slide |
| O-2936.1 | | Same as O-2936; p/o H-2922 | For Latch in Chassis Slide |
| O-2937 | Low Failure Item | SPRING: flat type; beryllium copper alloy no. 25 cond. 1/4 H, 0.025 in. thk strip per MIL-C-947, silver pl; one no. 3-48 thd mtg hole on term; 1-3/8 in. lg, 15/16 in. h; CBTL part/dwg NL-900142-1; p/o S-2919; same as O-510 | For Contact in S-2919 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|-------------------|
| P-2001 | N17-C-71408-5333 | CONNECTOR, PLUG, ELECTRICAL: 1 contact, male, round; straight type; BNC connector; 31/32 in. lg, 9/16 in. diam o/a; RF connector, 50 ohms nominal impedance; constant frequency impedance; cylindrical shape, brass, silver pl; locking type; teflon insert; 0.206 in. diam max cable opening; NAVY dwg RE49F246; MIL type UG-88/U; same as P-601 | 1d Output |
| P-2002 | | Same as P-2001 | 1b Output |
| P-2003 | | Same as P-2001 | 1a Output |
| P-2004 | | Same as P-2001 | 1c Output |
| P-2005 | | Same as P-2001 | 1e Output |
| P-2006 | N17-C-73301-5358 | CONNECTOR, RECEPTACLE, ELECTRICAL: 14 contacts, male, round, no. 20 AWG; polarized; straight type; 1-1/4 in. lg, 7/16 in. wd, 25/32 in. h o/a dimen; rectangular shape body, molded melamine; two no. 4-40 NC-2 thd screws, 0.937 in. mtg centers; contacts brass, gold pl; CCCK type MRE-14P-G; same as J-1111 | Unit 1 Power |
| P-2007 thru P-2030 | | Not Used | |
| P-2031 | | Same as P-2001 | 1a Input |
| P-2032 | | Same as P-2001 | 2b Output |
| P-2033 | | Same as P-2001 | 2c Output |
| P-2034 | | Same as P-2001 | 2a Output |
| P-2035 | | Same as P-2001 | 2d Output |
| P-2036 | | Same as P-2001 | 2e Output |
| P-2037 | | Same as P-2006 | Unit 2 Power |
| P-2038 thru P-2050 | | Not Used | |
| P-2051 | | Same as P-2001 | 3b Output |
| P-2052 | | Same as P-2001 | 3a Output |
| P-2053 | N17-C-73619-5096 | CONNECTOR, RECEPTACLE, ELECTRICAL: 21 contacts, male, round; polarized; straight type; 2-1/4 in. lg, 3/8 in. wd, 27/32 in. h o/a including mtg studs and polarizing pins; rectangular shape, molded melamine; two no. 4-40 NC-2 thd mtg studs, 1/4 in. lg, spaced 1.937 in. c to c; pin contacts brass, gold pl; CCCK part/dwg MRE 21P-G | Unit 3 Power |
| P-2054 thru P-2100 | | Not Used | |
| P-2101 | | Same as P-2001 | 2a Input |
| P-2102 | | Same as P-2001 | 4a Output |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|----------------------|-------------------|
| P-2103 | | Same as P-2006 | Unit 4 Power |
| P-2104 thru P-2125 | | Not Used | |
| P-2126 | | Same as P-2053 | Unit 12 Power |
| P-2127 thru P-2150 | | Not Used | |
| P-2151 | | Same as P-2001 | 4a Input |
| P-2152 | | Same as P-2001 | 2b Input |
| P-2153 | | Same as P-2001 | 1b Input |
| P-2154 | | Same as P-2001 | 12a Input |
| P-2155 | | Same as P-2001 | 3a Input |
| P-2156 | | Same as P-2001 | 5a Output |
| P-2157 | | Same as P-2006 | Unit 5 Power |
| P-2158 thru P-2200 | | Not Used | |
| P-2201 | | Same as P-2001 | 1c Input |
| P-2202 | | Same as P-2001 | 6c Output |
| P-2203 | | Same as P-2001 | 6a Output |
| P-2204 | | Same as P-2001 | 2c Input |
| P-2205 | | Same as P-2001 | 5a Input |
| P-2206 | | Same as P-2001 | 6b Output |
| P-2207 | | Same as P-2053 | Unit 6 Power |
| P-2208 thru P-2300 | | Not Used | |
| P-2301 | | Same as P-2001 | 2d Input |
| P-2302 | | Same as P-2001 | 7b Output |
| P-2303 | | Same as P-2001 | 7a Output |
| P-2304 | | Same as P-2006 | Unit 7 Power |
| P-2305 thru P-2325 | | Not Used | |
| P-2326 | | Same as P-2001 | 1d Input |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|----------------------|
| P-2327 | | Same as P-2001 | 8a Output |
| P-2328 | | Same as P-2001 | 7a Input |
| P-2329 | | Same as P-2001 | 6b Input |
| P-2330 | | Same as P-2001 | 8b Output |
| P-2331 | | Not Used | |
| P-2332 | | Same as P-2006 | Unit 8 Power |
| P-2333 thru P-2425 | | Not Used | |
| P-2426 | | Same as P-2001 | 8b Input |
| P-2427 | | Same as P-2001 | 7b Input |
| P-2428 | | Same as P-2001 | 9 Output |
| P-2429 | | Same as P-2006 | Unit 9 Power |
| P-2430 thru P-2525 | | Not Used | |
| P-2526 | | Same as P-2001 | 2e Input |
| P-2527 | | Same as P-2001 | 10 Output |
| P-2528 | | Same as P-2006 | Unit 10 Power |
| P-2529 thru P-2625 | | Not Used | |
| P-2626 | | Same as P-2001 | 10a Input |
| P-2627 | | Same as P-2001 | 9a Input |
| P-2628 | N17-C-71408-3425 | CONNECTOR, PLUG, ELECTRICAL: 1 contact, male, round; straight type; 31/32 in. lg, 9/16 in. diam o/a; RF connector, non-constant frequency impedance; cylindrical shape, brass, silver pl; locking type; styramic insert; 0.250 in. diam max cable opening; NAVY dwg RE49F380; MIL type UG-260/U | 11a Output |
| P-2629 | | Same as P-2006 | Unit 11A Power |
| P-2630 thru P-2650 | | Not Used | |
| P-2651 | | Same as P-2001 | 10b Input |
| P-2652 | | Same as P-2001 | 9b Input |
| P-2653 | | Same as P-2628 | 11b Output |
| P-2654 | | Same as P-2006 | Unit 11B Power |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|--|
| P-2655 thru P-2800 | | Not Used | |
| P-2801 | | Same as P-2001 | 10c Input |
| P-2802 | | Same as P-2001 | 9c Input |
| P-2803 | | Same as P-2628 | 11c Output |
| P-2804 | | Same as P-2006 | Unit 11C Power |
| R-2001 | | Not Used | |
| R-2002 | N16-R-50821-431 | RESISTOR, FIXED, COMPOSITION: 470,000 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF474J | Screen Filter V-2001, Unit 1 |
| R-2003 | | Not Used | |
| R-2004 | N16-R-50065-431 | RESISTOR, FIXED, COMPOSITION: 3300 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF332J | B+ Filter, Unit 1 |
| R-2005 | N16-R-50713-431 | RESISTOR, FIXED, COMPOSITION: 220,000 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF224J; same as R-1090 | Plate Load V-2001, Unit 1 |
| R-2006 | | Same as R-2005 | Plate Load V-2001, Unit 1 |
| R-2007 | N16-R-50974-431 | RESISTOR, FIXED, COMPOSITION: 1.0 megohm, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF105J | Grid Leak V-2001, Unit 1 |
| R-2008 | N16-R-50353-431 | RESISTOR, FIXED, COMPOSITION: 18,000 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF183J; same as R-1017 | Voltage Divider, Unit 1 |
| R-2009 | | Same as R-2002 | Grid Leak V-2002, Unit 1 |
| R-2010 | N16-R-50129-811 | RESISTOR, FIXED, COMPOSITION: 4700 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF472K | Cathode Voltage Divider V-2002, Unit 1 |
| R-2011 | N16-R-50012-811 | RESISTOR, FIXED, COMPOSITION: 2,200 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF222K; same as R-1010 | Cathode Voltage Divider V-2002, Unit 1 |
| R-2012 | | Same as R-2011 | Cathode Bias V-2002, Unit 1 |
| R-2013 | N16-R-50372-811 | RESISTOR, FIXED, COMPOSITION: 22,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF223K | Cathode Voltage Divider V-2002, Unit 1 |
| R-2014 | | Same as R-2013 | Cathode Bias V-2002, Unit 1 |
| R-2015 | N16-R-50822-811 | RESISTOR, FIXED, COMPOSITION: 470,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF474K; same as R-1035 | Grid Leak V-2002, Unit 1 |
| R-2016 | N16-R-49941-511 | RESISTOR, FIXED, COMPOSITION: 1200 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42GF122K | Plate Filter V-2002, Unit 1 |
| R-2017 | | Same as R-2015 | Grid Leak V-2003, Unit 1 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--|
| R-2018 | | Same as R-2013 | Cathode Voltage Divider V-2003, Unit 1 |
| R-2019 | | Same as R-2013 | Cathode Bias V-2003, Unit 1 |
| R-2020 | | Same as R-2013 | Cathode Voltage Divider V-2003, Unit 1 |
| R-2021 | | Same as R-2013 | Cathode Bias V-2003, Unit 1 |
| R-2022 | | Same as R-2015 | Grid Leak V-2003, Unit 1 |
| R-2023 | | Same as R-2011 | Voltage Divider J-2004, Unit 1 |
| R-2024 | N16-R-50282-811 | RESISTOR, FIXED, COMPOSITION: 10,000 ohms $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF103K | Voltage Divider J-2005, Unit 1 |
| R-2025 | | Same as R-2013 | Voltage Divider J-2005, Unit 1 |
| R-2026 | | Same as R-2011 | Voltage Divider J-2003, Unit 1 |
| R-2027 | N16-R-49922-811 | RESISTOR, FIXED, COMPOSITION: 1000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF102K; same as R-1033 | Voltage Divider J-2002, Unit 1 |
| R-2028 | | Same as R-2011 | Voltage Divider J-2001, Unit 1 |
| R-2029 | | Not Used | |
| R-2030 | | Not Used | |
| R-2031 | N16-R-50165-811 | RESISTOR, FIXED, COMPOSITION: 5600 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF562K; same as R-1026 | 1A Input Load V-2031, Unit 2 |
| R-2032 | | Same as R-2015 | Grid Leak V-2031, Unit 2 |
| R-2033 | N16-R-50634-234 | RESISTOR, FIXED, COMPOSITION: 100,000 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30GF104K | Screen Filter V-2031, Unit 2 |
| R-2034 | | Same as R-2015 | Grid Leak V-2032, Unit 2 |
| R-2035 | | Same as R-2033 | Screen Filter V-2032, Unit 2 |
| R-2036 | | Same as R-2027 | Voltage Divider J-2032, Unit 2 |
| R-2037 | | Same as R-2027 | Voltage Divider J-2033, Unit 2 |
| R-2038 | N16-R-50480-811 | RESISTOR, FIXED, COMPOSITION: 47,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF473K; same as R-1018 | Grid Leak V-2033, Unit 2 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|--|
| R-2039 | | Same as R-2013 | Cathode Bias V-2033, Unit 2 |
| R-2040 | | Same as R-2013 | Cathode Bias V-2034, Unit 2 |
| R-2041 | | Same as R-2013 | Cathode Bias V-2034, Unit 2 |
| R-2042 | | Same as R-2013 | Cathode Bias V-2033, Unit 2 |
| R-2043 | | Same as R-2016 | Plate Filter V-2033, Unit 2 |
| R-2044 | N16-R-49660-431 | RESISTOR, FIXED, COMPOSITION: 220 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF221J | Parasitic Sup- pressor V-2033, Unit 2 |
| R-2045 | | Same as R-2044 | Parasitic Sup- pressor V-2033, Unit 2 |
| R-2046 | | Same as R-2044 | Parasitic Sup- pressor V-2034, Unit 2 |
| R-2047 | | Same as R-2044 | Parasitic Sup- pressor V-2034, Unit 2 |
| R-2048 thru R-2050 | | Not Used | |
| R-2051 | | Same as R-2011; p/o Z-2051 | Parasitic Sup- pressor V-2051, Unit 3 |
| R-2052 | N16-R-50759-811 | RESISTOR, FIXED, COMPOSITION: 330,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF334K; p/o Z-2051 | Grid Leak V-2051, Unit 3 |
| R-2053 | | Same as R-2031 | Filter Loading V-2051, Unit 3 |
| R-2054 | N16-R-50236-940 | RESISTOR, FIXED, COMPOSITION: 8200 ohms, $\pm 5\%$; 2 w; per spec JAN-R-11; JAN type RC42GF822J | B+ Filter, Unit 3 |
| R-2055 | | Same as R-2054 | B+ Filter V-2051, Unit 3 |
| R-2056 | N16-R-50201-811 | RESISTOR, FIXED, COMPOSITION: 6800 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF682K | Filter Loading J-2051, Unit 3 |
| R-2057 | N16-R-49841-811 | RESISTOR, FIXED, COMPOSITION: 680 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF681K | Voltage Divider J-2052, Unit 3 |
| R-2058 | | Same as R-2013 | Cathode Voltage Divider V-2002, Unit 3 |
| R-2059 | N16-R-50164-431 | RESISTOR, FIXED, COMPOSITION: 5600 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF562J | Voltage Divider J-2051, Unit 3 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|--|
| R-2060 | | Same as R-2011 | Thermostat Protection S-2054, Unit 3 |
| R-2061 | N16-R-49580-811 | RESISTOR, FIXED, COMPOSITION: 100 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF101K; same as R-1124 | Thermostat Spark Suppressor S-2054, Unit 3 |
| R-2062 thru R-2100 | | Not Used | |
| R-2101 | | Same as R-2011 | 2a Input Load J-2101, Unit 4 |
| R-2102 | | Same as R-2015 | Grid Leak V-2101, Unit 4 |
| R-2103 | | Same as R-2033 | Screen Filter V-2101, Unit 4 |
| R-2104 | | Same as R-2015 | Grid Leak V-2102, Unit 4 |
| R-2105 | N16-R-50445-233 | RESISTOR, FIXED, COMPOSITION: 39,000 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30GF393K | Screen Filter V-2102, Unit 4 |
| R-2106 thru R-2125 | | Not Used | |
| R-2126 | N16-R-80350-2142 | RESISTOR, FIXED, WIRE WOUND: 10,000 ohms, $\pm 1\%$; 1/4 w; per spec JAN-R-93; JAN type RB51B10001F; p/o Z-2126 | Cathode Load V-2126, Unit 12 |
| R-2127 | N16-R-50633-811 | RESISTOR, FIXED, COMPOSITION: 100,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF104K; p/o Z-2126; same as R-1072 | Cathode Coupling V-2126, Unit 12 |
| R-2128 | N16-R-99999-0866 | RESISTOR, FIXED, WIRE WOUND: 4900 ohms, $\pm 1\%$; 1/4 w; 3/4 in. lg, 7/16 in. diam; inductive winding; resistor shall consist of 1000 turns of wire having approximately 75 ohms per foot at 100kc; effective series inductance of 1 mh; ceramic coating; 2 axial wire lead term; term mtd; CSM type BX-181-A Part no. 32 per CBTL specification dwg NL-962305-1; p/o Z-2126 | Control Tube Plate Load V-2127, Unit 12 |
| R-2129 | | Same as R-2024 | Voltage Divider, Unit 12 |
| R-2130 | | Same as R-2052; p/o Z-2126 | Grid Leak V-2128, Unit 12 |
| R-2131 | | Same as R-2128 | Cathode Bias V-2127, Unit 12 |
| R-2132 | N16-R-80304-8039 | RESISTOR, FIXED, WIRE WOUND: 5000 ohms, $\pm 1\%$; 0.6 w; per spec JAN-R-93; JAN type RB42B50000F | B+ Filter, Unit 12 |
| R-2133 | | Same as R-2132 | B+ Filter, Unit 12 |
| R-2134 | | Same as R-2010 | Filter Loading T-2126, Unit 12 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|---------------------------------------|
| R-2135 | N16-R-50013-466 | RESISTOR, FIXED, COMPOSITION: 2200 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42GF222K | Thermostat Protection S-2126, Unit 12 |
| R-2136 | | Same as R-2061 | Spark Suppressor S-2126, Unit 12 |
| R-2137 | | Same as R-2010 | Voltage Divider, Unit 12 |
| R-2138 | N16-R-49706-811 | RESISTOR, FIXED, COMPOSITION: 330 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF331K | Parasitic Suppressor V-2126, Unit 12 |
| R-2139 | | Same as R-2138 | Parasitic Suppressor V-2127, Unit 12 |
| R-2140 | N16-R-99999-0852 | RESISTOR, FIXED, FILM: body style no. 110, Ref Dwg Group 2; 5000 ohms, $\pm 5\%$; 1/2 w; metal film; temp coefficient $\pm 0.03\%$ of total resistance/ $^{\circ}\text{C}$; o/a dimen 15/32 in. lg by 0.155 in. diam; enamel coating, resistant to humidity; 2 axial wire lead term, 1-1/2 in. lg; CCC Nobeloy type NF 1/2 | B+ Filter, Unit 12 |
| R-2141 thru R-2150 | | Not Used | |
| R-2151 | N16-R-49444-431 | RESISTOR, FIXED, COMPOSITION: 51 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF510J | 4a Input Load J-2151, Unit 5 |
| R-2152 | | Same as R-2027 | 2b Input Load J-2152, Unit 5 |
| R-2153 | N16-R-51065-811 | RESISTOR, FIXED, COMPOSITION: 2.2 megohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF225K; same as R-1127 | Grid Leak V-2151, Unit 5 |
| R-2154 | | Not Used | |
| R-2155 | | Same as R-2013 | Grid Leak V-2151, Unit 5 |
| R-2156 | N16-R-49805-818 | RESISTOR, FIXED, COMPOSITION: 560 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20GF561K | Cathode Bias V-2151, Unit 5 |
| R-2157 | | Same as R-2105 | Screen Filter V-2151, Unit 5 |
| R-2158 | | Not Used | |
| R-2159 | | Not Used | |
| R-2160 | N16-R-49625-811 | RESISTOR, FIXED, COMPOSITION: 150 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF151K | 3a Input Load J-2155, Unit 5 |
| R-2161 | | Same as R-2156 | Cathode Bias V-2152, Unit 5 |
| R-2162 | | Same as R-2105 | Screen Filter V-2152, Unit 5 |
| R-2163 | | Same as R-2156 | Cathode Bias V-2153, Unit 5 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|--|
| R-2164 | | Same as R-2105 | Screen Filter V-2153, Unit 5 |
| R-2165 | | Same as R-2156 | Voltage Divider J-2154, Unit 5 |
| R-2166 | | Same as R-2024 | Voltage Divider J-2154, Unit 5 |
| R-2167 | | Not Used | |
| R-2168 | | Not Used | |
| R-2169 | N16-R-50400-240 | RESISTOR, FIXED, COMPOSITION: 27,000 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30GF273K | Screen Filter V-2154, Unit 5 |
| R-2170 | N16-R-49688-811 | RESISTOR, FIXED, COMPOSITION: 270 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF271K; same as R-1005 | Cathode Bias V-2154, Unit 5 |
| R-2171 | N16-R-50066-811 | RESISTOR, FIXED, COMPOSITION: 3300 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF332K | Parasitic Sup- pressor V-2152, Unit 5 |
| R-2172 thru R-2200 | | Not Used | |
| R-2201 | | Same as R-2024 | 1c Input Load, Unit 6 |
| R-2202 | | Same as R-2015 | Grid Leak V-2201, Unit 6 |
| R-2203 | N16-R-50282-725 | RESISTOR, FIXED, COMPOSITION: 10,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20GF103K | Plate Load V-2201, Unit 6 |
| R-2204 | N16-R-50373-423 | RESISTOR, FIXED, COMPOSITION: 22,000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42GF223K | Plate Dropping Resistor V-2201, Unit 6 |
| R-2205 | N16-R-50740-431 | RESISTOR, FIXED, COMPOSITION: 270,000 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF274J | Decoupling Resistor, Unit 6 |
| R-2206 | | Same as R-2170 | Cathode Bias V-2201, Unit 6 |
| R-2207 | N16-R-79309-4739 | RESISTOR, FIXED, WIRE WOUND: 30,000 ohms, $\pm 1\%$; 1/4 w; per spec JAN-R-93; JAN type RB10B30001F | Grid Leak V-2202, Unit 6 |
| R-2208 | | Not Used | |
| R-2209 | | Same as R-2038 | 10 kc Output J-2202, Unit 6 |
| R-2210 | N16-R-90868-2997 | RESISTOR, VARIABLE: wire wound; 2500 ohms, $\pm 10\%$; 2 w; per spec JAN-R-19; JAN type RA20A1SD252AK; same as R-1068 | Cathode Bias Adj. V-2202, Unit 6 |
| R-2211 | N16-R-50741-811 | RESISTOR, FIXED, COMPOSITION: 270,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF274K; same as R-1095 | Decoupling Resistor, Unit 6 |
| R-2212 | N16-R-50236-754 | RESISTOR, FIXED, COMPOSITION: 8200 ohms, $\pm 5\%$; 1 w; per spec JAN-R-11; JAN type RC30GF822J | Plate Dropping Resistor V-2202, Unit 6 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--|
| R-2213 | N16-R-50418-483 | RESISTOR, FIXED, COMPOSITION: 33,000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42GF333K | Plate Filter V-2202, Unit 6 |
| R-2214 | N16-R-49840-431 | RESISTOR, FIXED, COMPOSITION: 680 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF681J | Cathode Bias V-2203, Unit 6 |
| R-2215 | N16-R-50146-758 | RESISTOR, FIXED, COMPOSITION: 5100 ohms, $\pm 5\%$; 1 w; per spec JAN-R-11; JAN type RC30GF512J | Screen Bleeder V-2203, Unit 6 |
| R-2216 | N16-R-50677-431 | RESISTOR, FIXED, COMPOSITION: 150,000 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF154J; same as R-1108 | Plate Load V-2203, Unit 6 |
| R-2217 | | Same as R-2059 | 10 kc Rejection Filter, Unit 6 |
| R-2218 | N16-R-50371-431 | RESISTOR, FIXED, COMPOSITION: 22,000 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF223J | 10 kc Rejection Filter, Unit 6 |
| R-2219 | | Same as R-2218 | 10 kc Rejection Filter, Unit 6 |
| R-2220 | N16-R-50281-431 | RESISTOR, FIXED, COMPOSITION: 10,000 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF103J; same as R-1089 | Low Pass Filter, Unit 6 |
| R-2221 | N16-R-50128-431 | RESISTOR, FIXED, COMPOSITION: 4700 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF472J | Reactance Phase Shift, Unit 6 |
| R-2222 | N16-R-50372-131 | RESISTOR, FIXED, COMPOSITION: 22,000 ohms, $\pm 5\%$; 2 w; per spec JAN-R-11; JAN type RC42GF223J | Screen Filter V-2204, Unit 6 |
| R-2223 | | Same as R-2002 | Suppressor Grid Leak V-2203, Unit 6 |
| R-2224 | For Replacement Use N16-R-50011-438 | RESISTOR, FIXED, COMPOSITION: 2200 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF222J | Osc. Plate Load V-2205, Unit 6 |
| R-2225 | N16-R-50552-142 | RESISTOR, FIXED, COMPOSITION: 68,000 ohms, $\pm 5\%$; 2 w; per spec JAN-R-11; JAN type RC42GF683J | Plate Dropping Resistor V-2205, Unit 6 |
| R-2226 | N16-R-50416-431 | RESISTOR, FIXED, COMPOSITION: 33,000 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF333J | Osc. Grid Leak V-2206, Unit 6 |
| R-2227 | N16-R-50236-431 | RESISTOR, FIXED, COMPOSITION: 8200 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF822J | Cathode Divider V-2205, Unit 6 |
| R-2228 | N16-R-49687-431 | RESISTOR, FIXED, COMPOSITION: 270 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF271J | Cathode Divider V-2205, Unit 6 |
| R-2229 | N16-R-49876-431 | RESISTOR, FIXED, COMPOSITION: 820 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF821J | Voltage Divider, Unit 6 |
| R-2230 | | Same as R-2044 | Voltage Divider, Unit 6 |
| R-2231 | | Same as R-2027 | 2c Input Load J-2204, Unit 6 |
| R-2232 | | Same as R-2013 | Suppressor Grid Leak V-2206, Unit 6 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|---|
| R-2233 | N16-R-49444-438 | RESISTOR, FIXED, COMPOSITION: 51 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20GF510J | 5b Input Load J-2205, Unit 6 |
| R-2234 | | Same as R-2156 | Cathode Bias V-2206, Unit 6 |
| R-2235 | | Same as R-2105 | Screen Filter V-2206, Unit 6 |
| R-2236 | | Same as R-2156 | Cathode Bias V-2207, Unit 6 |
| R-2237 | | Same as R-2105 | Screen Filter V-2207, Unit 6 |
| R-2238 | | Same as R-2156 | Cathode Bias V-2208, Unit 6 |
| R-2239 | N16-R-50714-818 | RESISTOR, FIXED, COMPOSITION: 220,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20GF224K | Screen Filter V-2208, Unit 6 |
| R-2240 | | Same as R-2170 | Cathode Bias V-2209, Unit 6 |
| R-2241 | N16-R-50400-511 | RESISTOR, FIXED, COMPOSITION: 27,000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42GF273K | Cathode Bias V-2209, Unit 6 |
| R-2242 | N16-R-49804-431 | RESISTOR, FIXED, COMPOSITION: 560 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF561J | Parasitic Sup- pressor V-2208, Unit 6 |
| R-2243 | | Same as R-2242 | Parasitic Sup- pressor V-2209, Unit 6 |
| R-2244 | N16-R-49579-431 | RESISTOR, FIXED, COMPOSITION: 100 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF101J; same as R-1304 | Cathode Bias V-2204, Unit 6 |
| R-2245 thru R-2300 | | Not Used | |
| R-2301 | | Same as R-2011 | 2d Input Load J-2301, Unit 7 |
| R-2302 | | Same as R-2015 | Grid Leak V-2301, Unit 7 |
| R-2303 | N16-R-50652-233 | RESISTOR, FIXED, COMPOSITION: 120,000 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30GF124K | Screen Filter V-2301, Unit 7 |
| R-2304 | | Same as R-2156 | Cathode Bias V-2302, Unit 7 |
| R-2305 | N16-R-50337-518 | RESISTOR, FIXED, COMPOSITION: 15,000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42GF153K | Screen Filter V-2302, Unit 7 |
| R-2306 | | Same as R-2015 | Grid Leak V-2303, Unit 7 |
| R-2307 | N16-R-50481-233 | RESISTOR, FIXED, COMPOSITION: 47,000 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30GF473K | Screen Filter V-2303, Unit 7 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|--|
| R-2308 | | Same as R-2305 | Screen Filter V-2304, Unit 7 |
| R-2309 | | Same as R-2170 | Cathode Bias V-2304, Unit 7 |
| R-2310 | N16-R-49427-811 | RESISTOR, FIXED, COMPOSITION: 47 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF470K; same as R-1031 | Output Coupling J-2303, Unit 7 |
| R-2311 thru R-2325 | | Not Used | |
| R-2326 | | Same as R-2031 | 1d Input Load, Unit 8 |
| R-2327 | N16-R-50093-811 | RESISTOR, FIXED, COMPOSITION: 3,900 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF392K | Grid Leak V-2326, Unit 8 |
| R-2328 | | Same as R-2010 | Plate Load V-2326, Unit 8 |
| R-2329 | N16-R-50481-461 | RESISTOR, FIXED, COMPOSITION: 47,000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42GF473K; same as R-407 | Plate Filter V-2326, Unit 8 |
| R-2330 | | Same as R-2038 | Grid Leak V-2326, Unit 8 |
| R-2331 | | Same as R-2213 | Plate Filter V-2326, Unit 8 |
| R-2332 | | Same as R-2214 | Cathode Bias V-2327, Unit 8 |
| R-2333 | N16-R-50281-763 | RESISTOR, FIXED, COMPOSITION: 10,000 ohms, $\pm 5\%$; 1 w; per spec JAN-R-11; JAN type RC30GF103J | Screen Supply V-2327, Unit 8 |
| R-2334 | | Same as R-2002 | Suppressor Grid Leak V-2327, Unit 8 |
| R-2335 | | Same as R-2216 | Plate Load V-2327, Unit 8 |
| R-2336 | | Same as R-2218 | 100 kc Rejection Filter, Unit 8 |
| R-2337 | | Same as R-2218 | 100 kc Rejection Filter, Unit 8 |
| R-2338 | | Same as R-2221 | 100 kc Rejection Filter, Unit 8 |
| R-2339 | N16-R-50335-431 | RESISTOR, FIXED, COMPOSITION: 15,000 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF153J | Low Pass Filter, Unit 8 |
| R-2340 | | Same as R-2224 | Reactance Phase Shift V-2328, Unit 8 |
| R-2341 | | Same as R-2222 | Screen Filter V-2328, Unit 8 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|-----------------------------------|
| R-2342 | | Same as R-2226 | Grid Leak V-2329, Unit 8 |
| R-2343 | | Same as R-2225 | Screen Filter V-2329, Unit 8 |
| R-2344 | | Same as R-2221 | Plate Load V-2329, Unit 8 |
| R-2345 | | Same as R-2227 | Cathode Divider V-2329, Unit 8 |
| R-2346 | | Same as R-2214 | Cathode Divider V-2329, Unit 8 |
| R-2347 | | Same as R-2214 | Filter Load, Unit 8 |
| R-2348 | N16-R-49921-431 | RESISTOR, FIXED, COMPOSITION: 1000 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF102J | Cathode Load V-2334, Unit 8 |
| R-2349 | | Same as R-2151 | 7a Input Load J-2328, Unit 8 |
| R-2350 | N16-R-49805-811 | RESISTOR, FIXED, COMPOSITION: 560 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF561K; same as R-1373 | Cathode Bias V-2330, Unit 8 |
| R-2351 | | Same as R-2105 | Plate Dropping V-2330, Unit 8 |
| R-2352 | | Same as R-2151 | 6b Input Load J-2329, Unit 8 |
| R-2353 | | Same as R-2350 | Cathode Bias V-2331, Unit 8 |
| R-2354 | | Same as R-2105 | Plate Dropping V-2331, Unit 8 |
| R-2355 | | Same as R-2170 | Cathode Bias V-2332, Unit 8 |
| R-2356 | N16-R-50355-498 | RESISTOR, FIXED, COMPOSITION: 18,000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42GF183K | Plate Dropping V-2332, Unit 8 |
| R-2357 | | Same as R-2160 | Cathode Bias V-2333, Unit 8 |
| R-2358 | N16-R-50445-503 | RESISTOR, FIXED, COMPOSITION: 39,000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42GF393K | Plate Dropping V-2333, Unit 8 |
| R-2359 | N16-R-50237-811 | RESISTOR, FIXED, COMPOSITION: 8200 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF822K; same as R-1028 | Filter Loading Z-2327, Unit 8 |
| R-2360 | | Same as R-2359 | Filter Loading Z-2327, Unit 8 |
| R-2361 | | Same as R-2359 | Filter Loading Z-2328, Unit 8 |
| R-2362 | | Same as R-2359 | Filter Loading Z-2328, Unit 8 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|--|
| R-2363 | N16-R-50353-945 | RESISTOR, FIXED, COMPOSITION: 18,000 ohms, $\pm 5\%$; 2 w; per spec JAN-R-11; JAN type RC42GF183J | Plate Filter V-2334, Unit 8 |
| R-2364 | N16-R-50479-431 | RESISTOR, FIXED, COMPOSITION: 47,000 ohms, $\pm 5\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF473J | Grid Leak V-2334, Unit 8 |
| R-2365 thru R-2425 | | Not Used | |
| R-2426 | N16-R-50516-818 | RESISTOR, FIXED, COMPOSITION: 56,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20GF563K | (22-23) mc Gain Control S-2426B, Unit 9 |
| R-2427 | N16-R-50372-833 | RESISTOR, FIXED, COMPOSITION: 22,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20GF223K | (27-28) mc Gain Control S-2426B, Unit 9 |
| R-2428 | N16-R-50336-815 | RESISTOR, FIXED, COMPOSITION: 15,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20GF153K | (32-33) mc Gain Control S-2426B, Unit 9 |
| R-2429 | N16-R-50130-241 | RESISTOR, FIXED, COMPOSITION: 4700 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30GF472K | (37-38) mc Gain Control S-2426B, Unit 9 |
| R-2430 | N16-R-50012-816 | RESISTOR, FIXED, COMPOSITION: 2200 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20GF222K | 100 kc Step Gain Control S-2427B, Unit 9 |
| R-2431 | | Same as R-2430 | 100 kc Step Gain Control S-2427B, Unit 9 |
| R-2432 | | Same as R-2430 | 100 kc Step Gain Control S-2427B, Unit 9 |
| R-2433 | | Same as R-2430 | 100 kc Step Gain Control S-2427B, Unit 9 |
| R-2434 | | Same as R-2430 | 100 kc Step Gain Control S-2427B, Unit 9 |
| R-2435 | | Same as R-2430 | 100 kc Step Gain Control S-2427B, Unit 9 |
| R-2436 | | Same as R-2430 | 100 kc Step Gain Control S-2427B, Unit 9 |
| R-2437 | | Same as R-2430 | 100 kc Step Gain Control S-2427B, Unit 9 |
| R-2438 | | Same as R-2430 | 100 kc Step Gain Control S-2427B, Unit 9 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|---|
| R-2439 | | Same as R-2151 | 8b Input Load J-2426, Unit 9 |
| R-2440 | N16-R-49283-811 | RESISTOR, FIXED, COMPOSITION: 15 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF150K | 7b Input Load, Unit 9 |
| R-2441 | | Same as R-2350 | Cathode Bias V-2426, Unit 9 |
| R-2442 | N16-R-50418-233 | RESISTOR, FIXED, COMPOSITION: 33,000 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30GF333K | Screen Filter V-2426, Unit 9 |
| R-2443 | | Same as R-2221 | (27-28) mc Filter Loading S-2426C, Unit 9 |
| R-2444 | | Same as R-2138 | Cathode Bias V-2427, Unit 9 |
| R-2445 | N16-R-50310-238 | RESISTOR, FIXED, COMPOSITION: 12,000 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30GF123K | Screen Filter V-2427, Unit 9 |
| R-2446 | | Same as R-2221 | (27-28) mc Filter Loading S-2426D, Unit 9 |
| R-2447 | | Same as R-2138 | Cathode Bias V-2428, Unit 9 |
| R-2448 | | Same as R-2445 | Screen Filter V-2428, Unit 9 |
| R-2449 | | Same as R-2024 | (27-28) mc Filter Loading S-2426E, Unit 9 |
| R-2450 | | Same as R-2138 | Cathode Bias V-2429, Unit 9 |
| R-2451 | | Same as R-2445 | Screen Filter V-2429, Unit 9 |
| R-2452 | N16-R-49923-533 | RESISTOR, FIXED, COMPOSITION: 1000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42GF102K | B+ Filter, Unit 9 |
| R-2453 | | Same as R-2452 | B+ Filter, Unit 9 |
| R-2454 | N16-R-49364-811 | RESISTOR, FIXED, COMPOSITION: 33 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF330K | 7b Input Level J-2427, Unit 9 |
| R-2455 thru R-2525 | | Not Used | |
| R-2526 | | Same as R-2011 | 2e Input Load, Unit 10 |
| R-2527 | | Same as R-2127 | Grid Leak V-2526, Unit 10 |
| R-2528 | | Same as R-2305 | Screen Filter V-2529, Unit 10 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|--|
| R-2529 | | Same as R-2452 | B+ Filter, Unit 10 |
| R-2530 | N16-R-50633-785 | RESISTOR, FIXED, COMPOSITION: 100,000 ohms, ±10%; 1/2 w; per spec JAN-R-11; JAN type RC20GF104K | Screen Filter V-2526, Unit 10 |
| R-2531 | | Same as R-2127 | Grid Leak V-2527, Unit 10 |
| R-2532 | N16-R-50336-811 | RESISTOR, FIXED, COMPOSITION: 15,000 ohms, ±10%; 1/2 w; per spec JAN-R-11; JAN type RC20BF153K; same as R-1052 | Filter Load, Unit 10 |
| R-2533 | | Same as R-2530 | Screen Filter V-2527, Unit 10 |
| R-2534 | | Same as R-2310 | Parasitic Suppressor V-2528, Unit 10 |
| R-2535 | | Same as R-2138 | Cathode Bias V-2528, Unit 10 |
| R-2536 | | Same as R-2442 | Screen Filter V-2528, Unit 10 |
| R-2537 | | Same as R-2310 | Parasitic Suppressor V-2529, Unit 10 |
| R-2538 | | Same as R-2138 | Cathode Bias V-2529, Unit 10 |
| R-2539 | | Same as R-2454 | Output Coupling to J-2527, J-2530, Unit 10 |
| R-2540 | | Same as R-2532 | Filter Load, Unit 10 |
| R-2541 | | Same as R-2532 | Filter Load, Unit 10 |
| R-2542 | | Same as R-2532 | Filter Load, Unit 10 |
| R-2543 thru R-2625 | | Not Used | |
| R-2626 | | Same as R-2151 | 9a Input V-2626, Unit 11A |
| R-2627 | | Same as R-2151 | 10a Input V-2626, Unit 11A |
| R-2628 | | Same as R-2350 | Cathode Bias V-2626, Unit 11A |
| R-2629 | | Same as R-2105 | Plate Filter, Unit 11A |
| R-2630 | | Same as R-2011 | Filter Load, Unit 11A |
| R-2631 | | Same as R-2203 | Grid Return V-2626, Unit 11A |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--|
| R-2632 | | Same as R-2038 | Grid Leak V-2627, Unit 11A |
| R-2633 | | Same as R-2138 | Cathode Bias V-2627, Unit 11A |
| R-2634 | | Same as R-2011 | Plate Load V-2627, Unit 11A |
| R-2635 | N16-R-50337-243 | RESISTOR, FIXED, COMPOSITION: 15,000 ohms, $\pm 10\%$; 1 w; per spec JAN-R-11; JAN type RC30GF153K | Plate Filter V-2627, Unit 11A |
| R-2636 | | Same as R-2010 | Compensating Coil Loading L-2629, Unit 11A |
| R-2637 | | Same as R-2038 | Grid Leak V-2628, Unit 11A |
| R-2638 | | Same as R-2138 | Cathode Bias V-2628, Unit 11A |
| R-2639 | | Same as R-2635 | Plate Filter. V-2628, Unit 11A |
| R-2640 | N16-R-50039-811 | RESISTOR, FIXED, COMPOSITION: 2700 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF272K | Plate Load V-2628, Unit 11A |
| R-2641 | | Same as R-2024 | Compensating Coil Loading L-2630, Unit 11A |
| R-2642 | | Same as R-2038 | Grid Leak V-2629, Unit 11A |
| R-2643 | | Same as R-2061 | Cathode Bias V-2629, Unit 11A |
| R-2644 | | Same as R-2452 | B+ Filter, Unit 11A |
| R-2645 | | Same as R-2452 | B+ Filter, Unit 11A |
| R-2646 | | Same as R-2224 | Keying Voltage Decoupling, Unit 11A |
| R-2647 | N16-R-49499-811 | RESISTOR, FIXED, COMPOSITION: 68 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF680K | Parasitic Sup- pressor V-2629, Unit 11A |
| R-2648 | | Same as R-2647 | Parasitic Sup- pressor V-2629, Unit 11A |
| R-2649 | For Replacement Use N16-R-66103-7646 | RESISTOR, FIXED, WIRE WOUND: 2000 ohms, $\pm 5\%$; 10 w; per spec JAN-R-26A; JAN type RW31G202 | Load Resistor, Unit 11A |
| R-2650 | | Not Used | |
| R-2651 | | Same as R-2010 | (10-11) mc Gain Control S-2651B, Unit 11B |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|----------------------|---|
| R-2652 | | Same as R-2010 | (11-12) mc Gain Control S-2651B, Unit 11B |
| R-2653 | | Same as R-2010 | (12-13) mc Gain Control S-2651B, Unit 11B |
| R-2654 | | Same as R-2010 | (13-14) mc Gain Control S-2651B, Unit 11B |
| R-2655 | | Same as R-2010 | (14-15) mc Gain Control S-2651B, Unit 11B |
| R-2656 | | Same as R-2010 | (6-7) mc Gain Control S-2651B, Unit 11B |
| R-2657 | | Same as R-2010 | (7-8) mc Gain Control S-2651B, Unit 11B |
| R-2658 | | Same as R-2010 | (8-9) mc Gain Control S-2651B, Unit 11B |
| R-2659 | | Same as R-2010 | (9-10) mc Gain Control S-2651B, Unit 11B |
| R-2660 | | Not Used | |
| R-2661 | | Same as R-2151 | 9b Input V-2651, Unit 11B |
| R-2662 | | Same as R-2151 | 10b Input V-2651, Unit 11B |
| R-2663 | | Same as R-2350 | Cathode Bias V-2651, Unit 11B |
| R-2664 | | Same as R-2442 | Screen Filter V-2651, Unit 11B |
| R-2665 | | Same as R-2138 | Cathode Bias V-2652, Unit 11B |
| R-2666 | | Same as R-2445 | Screen Filter V-2652, Unit 11B |
| R-2667 | | Same as R-2010 | Filter Loading V-2653, Unit 11B |
| R-2668 | | Same as R-2138 | Cathode Bias V-2653, Unit 11B |
| R-2669 | | Same as R-2445 | Screen Filter V-2653, Unit 11B |
| R-2670 | | Same as R-2010 | Filter Loading V-2654, Unit 11B |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|---|
| R-2671 | | Same as R-2138 | Cathode Bias V-2654, Unit 11B |
| R-2672 | N16-R-50130-511 | RESISTOR, FIXED, COMPOSITION: 4700 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42GF472K | Screen Filter V-2654, Unit 11B |
| R-2673 | | Same as R-2452 | B+ Filter, Unit 11B |
| R-2674 | | Same as R-2452 | B+ Filter, Unit 11B |
| R-2675 | N16-R-50309-811 | RESISTOR, FIXED, COMPOSITION: 12,000 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20BF123K | Filter Loading J-2653, Unit 11B |
| R-2676 | | Same as R-2010 | Eliminate Oscilla- tion, Unit 11B |
| R-2677 | | Same as R-2224 | Keying Voltage Decoupling, Unit 11B |
| R-2678 thru R-2800 | | Not Used | |
| R-2801 | N16-R-50129-815 | RESISTOR, FIXED, COMPOSITION: 4700 ohms, $\pm 10\%$; 1/2 w; per spec JAN-R-11; JAN type RC20GF472K | (20-21) mc Gain Control S-2801A, Unit 11C |
| R-2802 | | Same as R-2801 | (21-22) mc Gain Control S-2801A, Unit 11C |
| R-2803 | | Same as R-2801 | (22-23) mc Gain Control S-2801A, Unit 11C |
| R-2804 | | Same as R-2801 | (23-24) mc Gain Control S-2801A, Unit 11C |
| R-2805 | | Not Used | |
| R-2806 | | Same as R-2801 | (16-17) mc Tuning S-2801A, Unit 11C |
| R-2807 | | Not Used | |
| R-2808 | | Same as R-2801 | (18-19) mc Tuning S-2801A, Unit 11C |
| R-2809 | | Same as R-2801 | (19-20) mc Gain Control S-2801A, Unit 11C |
| R-2810 | | Not Used | |
| R-2811 | | Same as R-2151 | 10c Input V-2801, Unit 11C |
| R-2812 | | Same as R-2151 | 9c Input V-2801, Unit 11C |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|---|
| R-2813 | | Same as R-2350 | Cathode Bias V-2801, Unit 11C |
| R-2814 | | Same as R-2442 | Screen Filter V-2801, Unit 11C |
| R-2815 | | Same as R-2024 | Filter Loading V-2802, Unit 11C |
| R-2816 | | Same as R-2138 | Cathode Bias V-2802, Unit 11C |
| R-2817 | | Same as R-2445 | Screen Filter V-2802, Unit 11C |
| R-2818 | | Same as R-2010 | Filter Loading V-2803, Unit 11C |
| R-2819 | | Same as R-2138 | Cathode Bias V-2803, Unit 11C |
| R-2820 | | Same as R-2445 | Screen Filter V-2803, Unit 11C |
| R-2821 | | Same as R-2010 | Filter Loading V-2804, Unit 11C |
| R-2822 | | Same as R-2138 | Cathode Bias V-2804, Unit 11C |
| R-2823 | N16-R-50166-512 | RESISTOR, FIXED, COMPOSITION: 5600 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42GF562K | Screen Filter V-2804, Unit 11C |
| R-2824 | | Same as R-2452 | B+ Filter, Unit 11C |
| R-2825 | | Same as R-2452 | B+ Filter, Unit 11C |
| R-2826 | | Same as R-2224 | Keying Voltage Decoupling, Unit 11C |
| R-2827 | | Same as R-2224 | Decoupling V-2802, Unit 11C |
| R-2828 thru R-2915 | | Not Used | |
| R-2916 | N16-R-90298-5420 | RESISTOR, VARIABLE: wire wound, one section, 200 ohms, $\pm 10\%$; 2 w; per spec JAN-R-19; JAN type RA20A1SD201AK | Freq. Shift Zero Adjust |
| R-2917 | N16-R-91288-6596 | RESISTOR, VARIABLE: wire wound element; sliding brush type contact; 1 section, 10,000 ohms, $\pm 5\%$; 5 w; not tapped; special G2.5 taper; 3 solder lug term; phenolic case, enclosed, 1-13/16 in. diam by 2 in. d; stainless steel shaft, round, 1/4 in. diam by 1-1/8 in. lg from mtg surface, normal torque; contact arm insulated, no "off" position; mtd by bushing 3/8 in. -32 NEF thd, 5/8 in. lg; thds nickel or cad pl; w/nut and lockwasher; resistance at 0° rotation shall be not more than 25 ohms; CAUY Model A, part/dwg SA311; CBTL part/dwg NL-961594-2 | Freq. Shift Control |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|---|
| R-2918 | N16-R-78138-3684 | RESISTOR, FIXED, WIRE WOUND: 6500 ohms, $\pm 10\%$; 0.4 w; per spec JAN-R-93; JAN type RB40B65000F | Voltage Divider |
| R-2919 | N16-R-91291-4935 | RESISTOR, VARIABLE: wire wound; 10,000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-19; JAN type RA20A1SD103AK | Freq. Shift Range Adjust |
| R-2920 thru R-2939 | | Not Used | |
| R-2940 | N16-T-53080 | RESISTOR, THERMAL: nominal operating current 0.28 amps, 11.2 w, maximum operating current 0.32 amps, 19.2 w, 40-60 volts, AC-DC; ballast tube type, ST-16 bulb MBCA Ref Group 7, 5-5/16 in. lg o/a; octal base for socket mtg; CAGK size ST-16, type 3-38 | Filament Regulation |
| R-2941 thru R-2951 | | Not Used | |
| R-2952 | N16-R-66066-8901 | RESISTOR, FIXED, WIRE WOUND: 1,400 ohms, $\pm 5\%$; 10 w; per spec JAN-R-26A; JAN type RW31F142 | Oper. Point Adj. R-2940 |
| R-2953 | N16-R-90870-9198 | RESISTOR, VARIABLE: wire wound; 2500 ohms, $\pm 10\%$; 25 w; linear taper; per spec JAN-R-22; JAN type RP101SD252KK | Oper. Point Adj. R-2940 |
| R-2954 | | Not Used | |
| R-2955 | N16-R-91291-4929 | RESISTOR, VARIABLE: wire wound; 10,000 ohms, $\pm 10\%$; 2 w; per spec JAN-R-19; JAN type RA20B1RD103AK; incl S-2997 | Wobbulator Control |
| R-2956 thru R-2966 | | Not Used | |
| R-2967 | | Same as R-2127 | RF Filter |
| R-2968 | | Same as R-2127 | DC Return for CR-2920 |
| R-2969 | | Same as R-2153 | Plate Load for V-2917 |
| S-2001 thru S-2050 | | Not Used | |
| S-2051 | Assemble from Component Parts | SWITCH, ROTARY: 2 sect each 1 pole, 12 pos, Mycalex #410 wafers; solid silver alloy shorting rotor contacts; solder lug type term; 2 studs 1-9/16 in. c to c w/no. 5-40 thd for wafer mtg; w/30° detent mechanism; per BuShips 16S19; CBTL part/dwg NL-960071-2 (2 sections); c/o S-2051B and S-2051C | Interpolation Osc. 1 kc Step Function, Unit 3 |
| S-2051B | N17-S-91897-8912 | SWITCH SECTION, ROTARY: 1 pole, 12 pos, spaced 30° apart; Mycalex #410 body; solid silver alloy shorting rotor contacts; 1-7/8 in. lg max, 1-5/8 in. wd, 1/8 in. thk; mtd by 2 holes for no. 5-40 screw 1-9/16 in. c to c; rotor c/o one pole which selects a single contact; per BuShips 16S19; CBTL part/dwg NL-960071-2-1; p/o S-2051 | Inductance Switching Wafer, Unit 3 |
| S-2051C | | Same as S-2051B; p/o S-2051; p/o Z-2052 | Capacitance Switching Wafer, Unit 3 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------|---|---|--------------------------------------|
| S-2052 | Assemble from Component Parts | SWITCH, ROTARY: 1 section, 1 pole, 12 pos, spaced 30°; solid silver alloy shorting rotor contacts; Mycalex #410 body; solder lug type term; 2 studs 1-9/16 in. c to c w/no. 5-40 thd for wafer mtg; w/30° detent mechanism; incl S-2052B; per BuShips 16S19; CBTL part/dwg NL-960071-2 (12 position) | 100 Cycle Step Switch, Unit 3 |
| S-2052B | | Same as S-2051B; p/o S-2052 | Inductance Switching Wafer, Unit 3 |
| S-2053 | | Same as S-2052; incl S-2053B | 10 Cycle Step Switch, Unit 3 |
| S-2053B | | Same as S-2051B; p/o S-2053 | Inductance Switching Wafer, Unit 3 |
| S-2054 | N17-S-69904-5886 | SWITCH, THERMOSTATIC: SPST; normally closed, contacts open on temp increase, 158° F operating temp setting, 1/10° F temp differential; bi-metal element; 120v AC, 0.35 amp; two wire lead term, 4 in. lg, axially located at one end; glass encasing tube; 2-3/8 in. lg, 0.388 in. diam; shimmed as required until thermostat is a slide fit into crystal oven; CEE type S1-1A; CBTL part/dwg NL-960149-2; p/o Z-2051 | Temp. Stabilization of Oven, Unit 3 |
| S-2055 thru S-2125 | | Not Used | |
| S-2126 | | Same as S-2054; p/o Z-2126 | Temp. Stabilization of Oven, Unit 3 |
| S-2201 | Assemble from Component Parts | SWITCH, ROTARY: 3 section each 1 pole, 12 position, solid silver alloy contacts; shorting rotor contact; 3 Mycalex #410 wafers; solder lug term; 2 studs 1-9/16 in. c to c w/no. 5-40 thd for wafer mtg; 30° detent mechanism; per BuShips 16S19; CBTL part/dwg NL-960071-2; c/o S-2201B, C and D | 10 kc Step Switch, Unit 6 |
| S-2201A | | Not Used | |
| S-2201B | | Same as S-2051B; p/o S-2201 | (1. 21-1. 3) mc Filter Steps, Unit 6 |
| S-2201C | | Same as S-2051B; p/o S-2201 | (1. 21-1. 3) mc Filter Steps, Unit 6 |
| S-2201D | | Same as S-2051B; p/o S-2201 | (210-300) kc Osc. Steps, Unit 6 |
| S-2202 thru S-2325 | | Not Used | |
| S-2326 | | Same as S-2201; c/o S-2326E, F and G | 100 kc Step Switch, Unit 8 |
| S-2326E | | Same as S-2051B; p/o S-2326 | (16. 6-17. 5) mc Filter, Unit 8 |
| S-2326F | | Same as S-2051B; p/o S-2326 | (16. 6-17. 5) mc Filter, Unit 8 |
| S-2326G | | Same as S-2051B; p/o S-2326 | (1. 6-2. 5) mc Tank, Unit 8 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|---|
| S-2327 thru S-2425 | | Not Used | |
| S-2426 | Assemble from Component Parts | SWITCH, ROTARY: 5 section, 4 section each 1 pole, 12 pos, spaced 30° apart, 1 section 2 pole, 5 pos, only 4 pos used; solid silver alloy shorting and nonshorting rotor contacts; 1 phenolic and 4 Mycalex no. 410 wafers; solder lug term; 2 studs 1-9/16 in. c to c w/no. 5-40 thd for wafer mtg; per BuShips 16S19; CBTL part/dwg NL-960071-2 (1 and 4 sections); c/o S-2426B, C, D, E and F | 5 mc Filter Selector, Unit 9 |
| S-2426A | | Not Used | |
| S-2426B | N17-S-91897-8915 | SWITCH SECTION, ROTARY: 2 pole, 5 pos, spaced 30°, only 4 pos used; plastic body; solid silver alloy nonshorting rotor contacts; 1-7/8 in. lg max by 1-9/16 in. wd by 1/16 in. thk; mtd by 2 holes for no. 5-40 thd screw 1-9/16 in. c to c; rotor c/o 2 poles which selects a single contact; per BuShips 16S19; CBTL part/dwg NL-960071-2-4; p/o S-2426 | Gain Equalizer Wafer V-2426, Unit 9 |
| S-2426C | | Same as S-2051B; p/o S-2426 | 5 mc Filter Selector V-2427, Unit 9 |
| S-2426D | | Same as S-2051B; p/o S-2426 | 5 mc Filter Selector V-2428, Unit 9 |
| S-2426E | | Same as S-2051B; p/o S-2426 | 5 mc Filter Selector V-2429, Unit 9 |
| S-2426F | | Same as S-2051B; p/o S-2426 | 5 mc Filter Selector J-2428, Unit 9 |
| S-2427 | Assemble from Component Parts | SWITCH, ROTARY: 5 section each 1 pole, 12 pos; solid silver alloy shorting and non-shorting rotor contacts; 1 plastic and 4 Mycalex no. 410 wafers; solder lug type term; 2 studs 1-9/16 in. c to c w/no. 5-40 thd for wafer mtg; with 30° detent mechanism; per BuShips 16S19; CBTL part/dwg NL-960071-2 (5 sections); c/o S-2427B, C, D, E and F | 100 kc Steps, Unit 9 |
| S-2427A | | Not Used | |
| S-2427B | N17-S-91897-8914 | SWITCH SECTION, ROTARY: 1 pole, 12 pos, spaced 30°, plastic body; solid silver alloy non-shorting rotor contacts; 1-7/8 in. lg max by 1-9/16 in. wd by 1/16 in. thk; mtd by 2 holes for no. 5-40 screw 1-9/16 in. c to c; rotor connects a single contact to pole; per BuShips 16S19; CBTL part/dwg NL-960071-2-2; p/o S-2427 | Gain Equalizer Wafer, Unit 9 |
| S-2427C | | Same as S-2051B; p/o S-2427 | 100 kc Filter Selector V-2427, Unit 9 |
| S-2427D | | Same as S-2051B; p/o S-2427 | 100 kc Filter Selector V-2428, Unit 9 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------|---|---|---|
| S-2427E | | Same as S-2051B; p/o S-2427 | 100 kc Filter Selector V-2429, Unit 9 |
| S-2427F | | Same as S-2051B; p/o S-2427 | 100 kc Filter Selector J-2428, Unit 9 |
| S-2428 thru S-2525 | | Not Used | |
| S-2526 | Assemble from Component Parts | SWITCH, ROTARY: 5 section each 1 pole, 12 pos; solid silver alloy contact; shorting rotor contacts; 5 Mycalex no. 410 wafers; solder lug terms; 2 studs 1-9/16 in. c to c w/no. 5-40 thd for wafer mtg; 30° detent mechanism; per BuShips 16S19; CBTL part/dwg NL-960071-2 (5 sections); c/o S-2526B, C, D, E and F | 1 mc Step Switch Unit 10 |
| S-2526A | | Not Used | |
| S-2526B | | Same as S-2051B; p/o S-2526 | 1 mc Step Filter Selector J-2527, Unit 10 |
| S-2526C | | Same as S-2051B; p/o S-2526 | 1 mc Step Filter Selector J-2527, Unit 10 |
| S-2526D | | Same as S-2051B; p/o S-2526 | 1 mc Step Filter Selector V-2529, Unit 10 |
| S-2526E | | Same as S-2051B; p/o S-2526 | 1 mc Step Filter Selector V-2529, Unit 10 |
| S-2526F | | Same as S-2051B; p/o S-2526 | 1 mc Step Filter Selector V-2528, Unit 10 |
| S-2527 thru S-2650 | | Not Used | |
| S-2651 | Assemble from Component Parts | SWITCH, ROTARY: 5 section each 1 pole, 11 pos; solid silver alloy shorting rotor contacts; 1 plastic and 4 Mycalex no. 410 wafers; solder lug term; 2 studs 1-9/16 in. c to c w/no. 5-40 thd for wafer mtg; with 30° detent mechanism; per BuShips 16S19; CBTL part/dwg NL-960071-2 (1 and 4 sections); c/o S-2651B, C, D, E and F | 1 mc Step Filter Switch, Unit 11B |
| S-2651A | | Not Used | |
| S-2651B | N17-S-91747-3033 | SWITCH SECTION, ROTARY: 1 pole, 11 pos; spaced 30° apart; plastic body; solid silver shorting rotor contacts; 1-7/8 in. lg max by 1-9/16 in. wd by 1/16 in. thk; mtd by 2 holes for no. 5-40 screw 1-9/16 in. c to c; rotor c/o one pole which selects a single contact; per BuShips 16S19; COC part no. 55421-H; CBTL part/dwg NL-960071-2-8; p/o S-2651 | Gain Equalizer, Unit 11B |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------|---|--|--|
| S-2651C | | Same as S-2051B; p/o S-2651 | 1 mc Step Filter Selector V-2652, Unit 11B |
| S-2651D | | Same as S-2051B; p/o S-2651 | 1 mc Step Filter Selector V-2653, Unit 11B |
| S-2651E | | Same as S-2051B; p/o S-2651 | 1 mc Step Filter Selector V-2654, Unit 11B |
| S-2651F | | Same as S-2051B; p/o S-2651 | 1 mc Step Filter Selector J-2653, Unit 11B |
| S-2652 | Assemble from Component Parts | SWITCH, ROTARY: 4 section each 1 pole, 11 pos; solid silver alloy contacts; shorting rotor contacts; 4 Mycalex no. 410 wafers; solder lug term; 2 studs 1-9/16 in. c to c w/no. 5-40 thd for wafer mtg, 30° detent mechanism; per BuShips 16S19; CBTL part/dwg NL-960071-2 (4 sections); c/o S-2652B, C, D and E | 100 kc Step Filter Switch, Unit 11B |
| S-2652A | | Not Used | |
| S-2652B | | Same as S-2051B; p/o S-2652 | 100 kc Step Filter Selector V-2652, Unit 11B |
| S-2652C | | Same as S-2051B; p/o S-2652 | 100 kc Step Filter Selector V-2653, Unit 11B |
| S-2652D | | Same as S-2051B; p/o S-2652 | 100 kc Step Filter Selector V-2654, Unit 11B |
| S-2652E | | Same as S-2051B; p/o S-2652 | 100 kc Step Filter Selector J-2653, Unit 11B |
| S-2653 thru S-2800 | | Not Used | |
| S-2801 | | Same as S-2427; c/o S-2801A, B, C, D, E | 1 mc Filter Step Switch, Unit 11C |
| S-2801A | | Same as S-2651B; p/o S-2801 | Gain Equalizer, Unit 11C |
| S-2801B | | Same as S-2051B; p/o S-2801 | 1 mc Step Filter Selector V-2802, Unit 11C |
| S-2801C | | Same as S-2051B; p/o S-2801 | 1 mc Step Filter Selector V-2803, Unit 11C |
| S-2801D | | Same as S-2051B; p/o S-2801 | 1 mc Step Filter Selector V-2804, Unit 11C |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|---|
| S-2801E | | Same as S-2051B; p/o S-2801 | 1 mc Step Filter Selector V-2804 Output, Unit 11C |
| S-2802 | | Same as S-2652; c/o S-2802A, B, C and D | 100 kc Filter Step Switch, Unit 11C |
| S-2802A | | Same as S-2051B; p/o S-2802 | 100 kc Step Filter Selector V-2802, Unit 11C |
| S-2802B | | Same as S-2051B; p/o S-2802 | 100 kc Step Filter Selector V-2803, Unit 11C |
| S-2802C | | Same as S-2051B; p/o S-2802 | 100 kc Step Filter Selector V-2804, Unit 11C |
| S-2802D | | Same as S-2051B; p/o S-2802 | 100 kc Step Filter Selector J-2803, Unit 11C |
| S-2803 thru S-2916 | | Not Used | |
| S-2917 | N17-S-72396-1763 | SWITCH, TOGGLE: SPDT; 125v DC, 40 amp; phenolic body; 2-7/32 in. lg, 1-9/64 in. h, 41/64 in. wd max o/a dimen; bat type actuating handle 11/16 in. lg excluding bushing; "OFF" in center pos; 3 solder lug type term; single hole mtg for 15/32 in. -32 thd bushing per JAN-S-23; JAN type ST42E | Zero Beat Selector |
| S-2918 | | Not Used | |
| S-2919 | N17-S-99999-0626 | SWITCH, INTERLOCK: push with snap action cheater; 2 piece door type; double pole single throw, male and female type, beryllium copper alloy strip contact; thermosetting plastic molding body; 1-1/2 in. lg by 1-1/2 in. wd by 1/2 in. thk o/a dimen excluding term posts and push rod; 2 screw type term located on both ends of switch; mtd by means of two 0.128 in. diam countersunk holes spaced 0.875 in. apart; interrupts 24v DC; CBTL part/dwg NL-900059-2; same as S-501 | Interlock Switch |
| S-2920 | N17-S-56407-2863 | SWITCH, PUSH: SPST; AC, 2 amps; 24v; momentary, normally open; nickel pl metal; 1-29/64 in. lg, 5/8 in. diam; push-button type; 2 screw type term located on bottom; single mtg bushing no. 15-32 in. thd; CAE type CH8450K1; same as S-1304 | Freq. Selector Door Interlock |
| S-2921 thru S-2995 | | Not Used | |
| S-2996 | | Same as S-2652; e/o S-2996A, B, C, D | Output Chassis Selector Freq. Range |
| S-2996A | | Same as S-2051B; p/o S-2996 | Output Chassis Selector B+ Deck |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------|---|---|--|
| S-2996B | | Same as S-2051B; p/o S-2996 | Output Chassis Selector (Unit 9 Deck) |
| S-2996C | | Same as S-2051B; p/o S-2996 | Output Chassis Selector (Unit 10 Deck) |
| S-2996D | | Same as S-2051B; p/o S-2996 | Output Chassis Selector (RF Output Deck) |
| S-2997 | For Reference Only | SWITCH, ROTARY: SPST; 3 amp; 125v AC; bakelite body; rotate 30° for actuation; p/o R-2955 | Wobbulator |
| T-2001 thru T-2050 | | Not Used | |
| T-2051 | N-17-T-81400-1626 | TRANSFORMER, RADIO FREQUENCY: two windings; 2 pie universal wound, no core, primary 2170 μ h at 1000 cps w/o shield can, secondary 2170 μ h at 1000 cps w/o shield can, primary 420 turns no. 38 EF AWG copper wire, secondary 420 turns no. 38 EF AWG copper wire, primary 38 ohms, secondary 38 ohms DC resistance; 90 to 100 kc frequency range; untapped; aluminum cylindrical shield can; 2-25/32 in. lg o/a, 1.089 in. wd, 0.928 in. h; molded thermosetting plastic form, air core; o/a dimen of coil form 2-7/32 in. lg, 0.828 in. diam; mtd by clamp; 4 solder lug type term located on one end of coil form; T-2051 stamped on coil form and shield can; moisture and fungus proofed; CBTL part/dwg NL-960140-14-5 | (90-100) kc Output Filter, Unit 3 |
| T-2052 thru T-2125 | | Not Used | |
| T-2126 | For Replacement Use N17-T-81400-1626 | TRANSFORMER, RADIO FREQUENCY: two windings, 2 pie universal wound, no core, primary 2170 μ h at 1000 cps w/o shield can, secondary 2170 μ h at 1000 cps w/o shield can, primary 420 turns no. 38 EF AWG copper wire, secondary 420 turns no. 38 EF AWG copper wire, 38 ohms in primary, 38 ohms in secondary DC resistance; frequency range of 90 to 100 kc; untapped; cylindrical aluminum shield can; 2-25/32 in. lg o/a, 1.089 in. wd, 0.928 in. h; molded thermosetting plastic form, air core; o/a dimen of coil form 2-7/32 in. lg, 0.828 in. diam; two no. 4-40 thd spade mtg bolts 5/16 in. lg w/31/32 in. mtg/c; 4 solder lug type term located on one end of coil form; T-2126 stamped on coil form and shield can; coils moisture and fungus proofed; CBTL part/dwg NL-960140-14-8 | 100 kc Output Filter, Unit 12 |
| T-2127 thru T-2200 | | Not Used | |
| T-2201 | N17-T-79607-5001 | TRANSFORMER, PULSE: blocking oscillator type; pulse repetition frequency of 10,000 cps, pulse width 10-20 microseconds; primary impedance 10,000 ohms, secondary impedance 44,000 ohms, DC resistance not rated; primary peak signal voltage 110v negative, 10v positive, current 0.005 amp, secondary peak voltage 225v positive; test voltage primary term no. 3 at +250v DC, secondary term no. 2 at ground potential; metal case hermetically sealed; o/a dimen 2 in. h by | 10 kc Blocking Osc. Transformer, Unit 6 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|----------------------------------|
| T-2201 (cont) | | 1-11/16 in. max diam; 4 solder lug type term on insulators 7/16 in. diam max by 3/4 in. h located on bottom; two no. 6-32 thd mtg studs 15/32 in. lg max on 1-3/16 in. mtg/c; CBEY part/dwg OD-1544A; CBTL part/dwg NL-960048-1 | |
| T-2202 | N17-T-81403-1626 | TRANSFORMER, RADIO FREQUENCY: two windings, 1 pie universal wound, primary inductance 230 μ h at 1000 cps w/o slug and shield can, secondary inductance 230 μ h at 1000 cps w/o slug and shield can, 160 turns no. 34 EF2 AWG copper wire on primary, 160 turns no. 34 EF2 AWG copper wire on secondary, 5.1 ohms primary DC resistance, 5.1 ohms secondary DC resistance; untapped; cylindrical aluminum shield can; 2-25/32 in. lg o/a by 1.089 in. wd by 0.828 in. diam; screwdriver adjustable iron slug adjusted by shaft at either end of shield can; mtd with two no. 4-40 thd spade bolts 51/64 in. lg w/31/32 in. mtg/c; 4 solder lug type term located at one end of coil form; T-2202 stamped on coil form and shield can; coils moisture and fungus proofed; CBTL part/dwg NL-960140-14-16 | Ringing Coil, Unit 6 |
| T-2203 | N17-T-81457-1626 | TRANSFORMER, RADIO FREQUENCY: two windings, single layer wound, primary inductance 2.8 μ h at 7.9 mc w/o slug and shield can, secondary inductance 2.8 μ h at 7.9 mc w/o slug and shield can, primary has 19 turns of no. 32 EF2 AWG copper wire, secondary 19 turns of no. 32 EF2 AWG copper wire; frequency range of 10.4 to 10.5 mc; untapped; aluminum cylindrical shield can; 2-25/32 in. lg o/a by 1.089 in. wd by 0.928 in. h; molded thermosetting plastic form with iron core inserted next to shield can; o/a dimen of coil form 2-7/32 in. lg by 0.828 in. diam; screwdriver adjustable iron slug adjusted by shaft on either end of shield can; two no. 4-40 thd spade mtg bolts 51/64 in. lg w/31/32 in. mtg/c; 4 solder lug type term located at one end of coil form; T-2203 stamped on coil form and shield can; coils moisture and fungus proofed; per spec MIL-T-27; CBTL part/dwg NL-960140-14-19 | (10.4-10.5) mc Filter, Unit 6 |
| T-2204 | | Same as T-2203 | (10.4-10.5) mc Filter, Unit 6 |
| T-2205 | | Same as T-2203 | (10.4-10.5) mc Filter, Unit 6 |
| T-2206 thru T-2325 | | Not Used | |
| T-2326 | N17-T-81430-1800 | TRANSFORMER, RADIO FREQUENCY: two windings, 2 pie universal wound, primary inductance 16.0 μ h at 1000 cps w/o slug and shield can, secondary 16.0 μ h at 1000 cps w/o slug and shield can, 38 turns of no. 7/41 EF2 AWG Litz copper wire on primary, 38 turns of no. 7/41 EF2 AWG Litz copper wire on secondary, 0.79 ohms primary DC resistance, 0.79 ohms secondary DC resistance; untapped; aluminum cylindrical shield can; 2-25/32 in. lg o/a by 1.089 in. wd by 0.928 in. h; molded thermosetting plastic form with iron core inserted next to shield can; o/a dimen of coil form 2-7/32 in. lg by 0.828 in. diam; screwdriver adjustable iron slug adjusted by shaft on either end of shield can; mtd with two no. 4-40 thd spade bolts 51/64 in. lg w/31/32 in. mtg/c; 4 solder lug type term located at one end of coil form; T-2326 stamped on coil form and shield can; coils moisture and fungus proofed; CBTL part/dwg NL-960140-14-27 | Ringing Coil, Unit 8 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|--------------------------|
| T-2327 thru T-2915 | | Not Used | |
| T-2916 | N17-T-65748-4629 | TRANSFORMER, AUDIO FREQUENCY: plate coupling type; 15,000 ohms primary impedance, 60,000 ohms secondary impedance; 750v RMS test voltage; upright steel case with hi-mu steel core; o/a dimen 1-13/32 in. lg by 15/16 in. diam; 0 db max audio operating level; primary to secondary turns ratio 2 to 1; rated frequency from 40 to 15,000 cps, not tuned; 4 solder lug type term located on mtg surface; 2 mtg holes 0.120 in. diam, 1-1/8 in. c to c; CUT part no. 89564-A, dwg no. SH-5722 | Phase Mod. |
| T-2917 | | Not Used | |
| T-2918 | | Not Used | |
| T-2919 | | Not Used | |
| T-2920 | N17-T-69160-1001 | TRANSFORMER, POWER, STEP-DOWN: hermetically sealed metal case; 60v AC, 50/60 cycles, single ph input; one output winding 6.3v at 2.4 amps; 1500v RMS test voltage; Robertson potting compound; 2-3/16 in. diam by 2-7/8 in. h on mtg base 2-3/16 in. sq; 4 standoffs, 5/16 in. diam by 7/16 in. h, solder lug type term located on mtg surface; four 0.177 in. diam mtg holes on 1-13/16 in. by 1-13/16 in. mtg/c; electrostatic shield; per spec MIL-T-27; CUT part F-3610, CBTL part/dwg NL-980604-1 | Regulated Fil. Supply |
| T-2921 | N17-T-70221-3877 | TRANSFORMER, POWER, STEP-DOWN: hermetically sealed metal case; 110v AC, 50/60 cycles, single ph input; one output winding 6.3v at 9.5 amps center tapped; Robertson potting compound, 2-15/16 in. diam by 3-3/4 in. h on 3 in. sq mtg base; MBCA Ref Dwg Group 12; 5 standoffs, 7/16 in. diam by 1/2 in. h, solder lug type term located on mtg surface; four 0.177 in. diam mtg holes on 2-3/8 in. by 2-3/8 in. mtg/c; electrostatic shield; per spec MIL-T-27; CUT part no. F-3608; CBTL part/dwg NL-980603-1 | Unregulated Fil. Supply |
| T-2922 | N17-T-70220-1704 | TRANSFORMER, POWER, STEP-DOWN: fully enclosed hermetically sealed metal case; 110v AC, 50/60 cycles, single ph input; one output winding 6.3v at 2.0 amp; 1500v RMS test voltage; Robertson potting compound; 2-3/16 in. diam by 2-7/8 in. lg; MBCA Ref Dwg Group 12; 4 solder lug type term on insulators 5/16 in. diam by 7/16 in. lg o/a on bottom; four 0.177 in. diam on 1-13/16 in. by 1-13/16 in. mtg/c on 2-3/16 in. sq mtg flange; electrostatic shield; per spec MIL-T-27; CUT part/dwg F-4237; CBTL part/dwg NL-960398-1 | Xtal Heater Supply |
| V-2001 | N16-T-75654 | ELECTRON TUBE: pentode; per spec JAN-1A; JAN type 5654 | Oscillator, Unit 1 |
| V-2002 | N16-T-75814 | ELECTRON TUBE: dual triode; per spec JAN-1A; JAN type 5814; same as V-1004 | Cathode Follower, Unit 1 |
| V-2003 | | Same as V-2002 | Cathode Follower, Unit 1 |
| V-2004 thru V-2030 | | Not Used | |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|---|
| V-2031 | | Same as V-2001 | Multiplier, Unit 2 |
| V-2032 | | Same as V-2001 | Multiplier, Unit 2 |
| V-2033 | | Same as V-2002 | Cathode Follower, Unit 2 |
| V-2034 | | Same as V-2002 | Cathode Follower, Unit 2 |
| V-2035 thru V-2050 | | Not Used | |
| V-2051 | N16-T-56192 | ELECTRON TUBE: pentode; per spec JAN-1A; JAN type 6AK6 | Oscillator, Unit 3 |
| V-2052 thru V-2100 | | Not Used | |
| V-2101 | | Same as V-2001 | Multiplier, Unit 4 |
| V-2102 | | Same as V-2001 | Multiplier, Unit 4 |
| V-2103 thru V-2125 | | Not Used | |
| V-2126 | N16-T-56175 | ELECTRON TUBE: pentode; per spec JAN-1A; JAN type 6AG5 | Control Follower, Unit 12 |
| V-2127 | | Same as V-2126 | Control Tube, Unit 12 |
| V-2128 | | Same as V-2051 | Oscillator, Unit 12 |
| V-2129 thru V-2150 | | Not Used | |
| V-2151 | N16-T-75725 | ELECTRON TUBE: pentode; per spec JAN-1A; JAN type 5725; same as V-1001 | Mixer, Unit 5 |
| V-2152 | | Same as V-2151 | Mixer, Unit 5 |
| V-2153 | | Same as V-2151 | Mixer, Unit 5 |
| V-2154 | | Same as V-2001 | Amplifier, Unit 5 |
| V-2155 thru V-2200 | | Not Used | |
| V-2201 | | Same as V-2001 | Decoupling Tube, Unit 6 |
| V-2202 | N16-T-58241 | ELECTRON TUBE: dual triode; per spec JAN-1A; JAN type 12AU7 | 10 kc Blocking Osc. & Shaper, Unit 6 |
| V-2203 | | Same as V-2151 | Mixer, Unit 6 |
| V-2204 | | Same as V-2001 | Reactance Tube, Unit 6 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|---|
| V-2205 | | Same as V-2051 | 10 kc Step Osc. (210-300) kc, Unit 6 |
| V-2206 | | Same as V-2151 | Mixer, Unit 6 |
| V-2207 | | Same as V-2151 | Mixer, Unit 6 |
| V-2208 | | Same as V-2001 | Amplifier, Unit 6 |
| V-2209 | | Same as V-2001 | Amplifier, Unit 6 |
| V-2210 thru V-2300 | | Not Used | |
| V-2301 | | Same as V-2001 | Multiplier, Unit 7 |
| V-2302 | | Same as V-2001 | Amplifier, Unit 7 |
| V-2303 | | Same as V-2001 | Multiplier, Unit 7 |
| V-2304 | | Same as V-2001 | Amplifier, Unit 7 |
| V-2305 thru V-2325 | | Not Used | |
| V-2326 | For Replacement Use N16-T-58240-14 | ELECTRON TUBE: dual triode; per spec JAN-1A; JAN type 6201; same as V-1015 | Clipper and Shaper, Unit 8 |
| V-2327 | | Same as V-2151 | Mixer, Unit 8 |
| V-2328 | | Same as V-2001 | Reactance Tube, Unit 8 |
| V-2329 | | Same as V-2051 | (1.6-2.5) mc Osc., Unit 8 |
| V-2330 | | Same as V-2151 | Mixer, Unit 8 |
| V-2331 | | Same as V-2151 | Mixer, Unit 8 |
| V-2332 | | Same as V-2001 | Amplifier, Unit 8 |
| V-2333 | | Same as V-2001 | Amplifier, Unit 8 |
| V-2334 | | Same as V-2051 | Cathode Follower, Unit 8 |
| V-2335 thru V-2425 | | Not Used | |
| V-2426 | | Same as V-2151 | Mixer, Unit 9 |
| V-2427 | | Same as V-2001 | Amplifier, Unit 9 |
| V-2428 | | Same as V-2001 | Amplifier, Unit 9 |
| V-2429 | | Same as V-2051 | Amplifier, Unit 9 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|-------------------------------|
| V-2430 thru V-2525 | | Not Used | |
| V-2526 | | Same as V-2001 | Harmonic Gen., Unit 10 |
| V-2527 | | Same as V-2001 | Amplifier, Unit 10 |
| V-2528 | | Same as V-2001 | Amplifier, Unit 10 |
| V-2529 | | Same as V-2001 | Amplifier, Unit 10 |
| V-2530 thru V-2625 | | Not Used | |
| V-2626 | | Same as V-2151 | Mixer, Unit 11A |
| V-2627 | | Same as V-2001 | Video Amplifier, Unit 11A |
| V-2628 | | Same as V-2001 | Video Amplifier, Unit 11A |
| V-2629 | N16-T-75687 | ELECTRON TUBE: dual-triode; per spec JAN-1A; JAN type 5687 | Cathode Follower, Unit 11A |
| V-2630 thru V-2650 | | Not Used | |
| V-2651 | | Same as V-2151 | Mixer, Unit 11B |
| V-2652 | | Same as V-2001 | Amplifier, Unit 11B |
| V-2653 | | Same as V-2001 | Amplifier, Unit 11B |
| V-2654 | | Same as V-2051 | Amplifier, Unit 11B |
| V-2655 thru V-2800 | | Not Used | |
| V-2801 | | Same as V-2151 | Mixer, Unit 11C |
| V-2802 | | Same as V-2001 | Amplifier, Unit 11C |
| V-2803 | | Same as V-2001 | Amplifier, Unit 11C |
| V-2804 | | Same as V-2051 | Amplifier, Unit 11C |
| V-2805 thru V-2916 | | Not Used | |
| V-2917 | N16-T-56255 | ELECTRON TUBE: electron ray; JAN type 6E5 | Cathode Ray Indicator |
| XF-2917 | Low Failure Item | FUSEHOLDER: extractor post type; 250v, 30 amp; accommodates 1 fuse, cartridge type, 1-1/2 in. lg, 13/32 in. diam; black bakelite body; bright alloy pl brass contacts; 2-1/4 in. lg, 1.775 in. wd, 1.2 in. h o/a dimen; 2 solder lug type term, hot | Holder for F-2917 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|----------------------------|---|--|------------------------------|
| XF-2917 | | tin dipped; two 0.167 in. mtg holes 1.312 in. c to c for fastening to panel; one mtg hole 0.865 in. diam; waterproof; CFA type HPC-DZ; CBTL part/dwg NL-900068-2; same as XF-501 | |
| XF-2918 | | Same as XF-2917 | Holder for F-2918 |
| XI-2916 | N17-L-76763-1597 | LIGHT, INDICATOR: supplied w/lens, 5/8 in. diam, clear, fluted, screw type holder; accommodates neon T3-1/4 NE 51 lamp, single contact miniature bayonet base, 110v; brass shell, black nickel finish, enclosed; 2-5/16 in. lg, 15/16 in. diam o/a dimen, 1 mtg hole required, 11/16 in. diam; accommodates up to 1/4 in. max thk panel; horizontally mtd; lamp replaceable from front of panel; 2 term, solder lug type, located on socket base, both insulated from shell; includes built in 51000 ohm, 1/3 watt, composition resistor; CAYZ type 53408-XP18-997; same as XI-503 | Retainer for I-2916 |
| XI-2917 | | Same as XI-2916 | Retainer for I-2917 |
| XI-2918 | For Replacement Use N17-L-76689-4654 | LIGHT, INDICATOR: supplied with 5/8 in. diam lens, amber, multivue, long plastic cap; screw type holder; accommodates T3-1/4 Mazda 47 lamp, single contact, miniature bayonet base; 125v, 75 w; brass and molded bakelite, black nickel finish, enclosed; 2-7/32 in. lg by 15/16 in. diam; 1 mtg hole required, 11/16 in. diam; accommodates up to 9/32 in. max panel thickness; horizontally mtd; lamp replaceable from front of panel; 2 term, solder lug type, located on socket base, both insulated from shell; CAYZ type 53410-XP18-993 | Retainer for I-2918 |
| XR-2940 | | Same as E-2919 | Socket for R-2940 |
| XV-2001 | N16-S-62603-6702 | SOCKET, ELECTRON TUBE: 7 contacts, brass, nickel pl; miniature; incl metal shield base, 0.800 in. diam, 0.611 in. h; incl center shield, 0.125 in. ID; oval; 1-1/8 in. lg, 0.800 in. wd, 25/32 in. h o/a dimen excluding term; molded thermosetting plastic body; one piece saddle mtg, 5/8 in. diam chassis hole required, 2 mtg holes, 0.125 in. diam, 0.875 in. c to c; per spec JAN-S-28A; JAN type TS102PO1; same as XV-1303 | Socket for V-2001, Unit 1 |
| XV-2002 | N16-S-64063-6713 | SOCKET, ELECTRON TUBE: 9 contacts, brass, nickel pl; miniature; incl metal shield base, 0.940 in. diam, 0.611 in. h; incl center shield, 0.125 in. ID; oval; 1-3/8 in. lg, 0.940 in. wd, 25/32 in. h o/a dimen excluding term; molded thermosetting plastic body; one piece saddle mtg, 3/4 in. diam chassis hole required, 2 mtg holes, 0.125 in. diam, 1.125 in. c to c; per spec JAN-S-28A; JAN type TS103PO1 | Socket for V-2002, Unit 1 |
| XV-2003 | | Same as XV-2002 | Socket for V-2003, Unit 1 |
| XV-2004 thru XV-2030 | | Not Used | |
| XV-2031 | | Same as XV-2001 | Socket for V-2031, Unit 2 |
| XV-2032 | | Same as XV-2001 | Socket for V-2032, Unit 2 |
| XV-2033 | | Same as XV-2002 | Socket for V-2033, Unit 2 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|----------------------------|---|--|----------------------------|
| XV-2034 | | Same as XV-2002 | Socket for V-2034, Unit 2 |
| XV-2035 thru XV-2050 | | Not Used | |
| XV-2051 | N16-S-62603-6700 | SOCKET, ELECTRON TUBE: 7 contacts, beryllium copper, silver pl; miniature; incl metal shield base, 0.800 in. diam, 0.611 in. h; incl center shield, 0.125 in. ID; oval; 1-1/8 in. lg, 0.800 in. wd, 25/32 in. h o/a dimen excluding term; ceramic insulator; one piece saddle mtg, 5/8 in. diam chassis hole required, 2 mtg holes, 0.125 in. diam; 0.875 in. c to c; per spec JAN-S-28A; JAN type TS102C01; same as XV-1001 | Socket for V-2051, Unit 3 |
| XV-2052 thru XV-2100 | | Not Used | |
| XV-2101 | N16-S-62603-6330 | SOCKET, ELECTRON TUBE: 7 contacts, beryllium copper, silver pl; miniature; metal shock shield not incl; incl center shield 3/16 in. diam; round shape; 1-1/8 in. lg, 3/4 in. wd, 9/16 in. h o/a dimen excluding term; mica plexicon body; one piece saddle mtg; 0.687 in. diam chassis hole required; 2 mtg holes 0.125 in. diam spaced 0.875 in. c to c; incl one capacitor of 0.001 mf in each of pins 3 and 6; CMG part/dwg 43, type 43AM36; incl C-2102 and C-2110 | Socket for V-2101, Unit 4 |
| XV-2102 | | Same as XV-2101; incl C-2106 and C-2111 | Socket for V-2102, Unit 4 |
| XV-2103 thru XV-2125 | | Not Used | |
| XV-2126 | N16-S-63509-2037 | SOCKET, ELECTRON TUBE: 8 contacts, phosphor bronze, silver pl; medium; oval; 1-9/16 in. lg, 1-7/32 in. diam, 1/2 in. h o/a dimen excluding term; mica phenolic body; one piece saddle mtg; 0.084 in. diam chassis hole required, 2 mtg holes 0.136 in. diam, spaced 1-5/16 in. c to c; low loss mica phenolic; contact tails hot tin dipped; CMG dwg 9905, type 51A-13203; same as VX-1301 | Socket for V-2126, Unit 12 |
| XV-2127 | N16-S-62603-6925 | SOCKET, ELECTRON TUBE: 7 contacts, beryllium copper, silver pl; miniature; metal shock shield not incl; incl center shield 3/16 in. diam; round shape; 1-3/32 in. lg, 51/64 in. wd, 25/64 in. h o/a dimen excluding term; ceramic dielectric body; one piece saddle mtg; 5/8 in. chassis hole required, 2 mtg holes 0.120 in. diam, spaced 0.875 in. c to c; CMG part/dwg 53C13142 | Socket for V-2127, Unit 12 |
| XV-2128 | | Same as XV-2001 | Socket for V-2128, Unit 12 |
| XV-2129 thru XV-2150 | | Not Used | |
| XV-2151 | | Same as XV-2001 | Socket for V-2151, Unit 5 |
| XV-2152 | | Same as XV-2001 | Socket for V-2152, Unit 5 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|----------------------------|---|---|---------------------------|
| XV-2153 | N16-S-62603-6338 | SOCKET, ELECTRON TUBE: 7 contacts, beryllium copper, silver pl; miniature; metal shock shield not incl; incl center shield 3/16 in. diam; round shape; 1-1/8 in. lg, 3/4 in. wd, 9/16 in. h o/a dimen excluding term; mica plexicon body; one piece saddle mtg; 0.687 in. diam chassis hole required; 2 mtg holes 0.125 in. diam spaced 0.875 in. c to c; incl capacitor of 0.001 mf in each of pins 2, 3 and 6; CMG dwg 43, type 43AM236; incl C-2163, C-2164 and C-2167 | Socket for V-2153, Unit 5 |
| XV-2154 | | Same as XV-2153; incl C-2168, C-2172, and C-2173 | Socket for V-2154, Unit 5 |
| XV-2155 thru XV-2200 | | Not Used | |
| XV-2201 | | Same as XV-2051 | Socket for V-2201, Unit 6 |
| XV-2202 | | Same as XV-2002 | Socket for V-2202, Unit 6 |
| XV-2203 | | Same as XV-2051 | Socket for V-2203, Unit 6 |
| XV-2204 | | Same as XV-2051 | Socket for V-2204, Unit 6 |
| XV-2205 | | Same as XV-2051 | Socket for V-2205, Unit 6 |
| XV-2206 | | Same as XV-2051 | Socket for V-2206, Unit 6 |
| XV-2207 | | Same as XV-2153; incl C-2235, C-2236, and C-2248 | Socket for V-2207, Unit 6 |
| XV-2208 | | Same as XV-2153; incl C-2240, C-2241, and C-2249 | Socket for V-2208, Unit 6 |
| XV-2209 | | Same as XV-2153; incl C-2243, C-2244, and C-2250 | Socket for V-2209, Unit 6 |
| XV-2210 thru XV-2300 | | Not Used | |
| XV-2301 | | Same as XV-2101; incl C-2302, C-2310 | Socket for V-2301, Unit 7 |
| XV-2302 | | Same as XV-2153; incl C-2305, C-2306, and C-2311 | Socket for V-2302, Unit 7 |
| XV-2303 | | Same as XV-2101; incl C-2312, C-2316 | Socket for V-2303, Unit 7 |
| XV-2304 | | Same as XV-2153; incl C-2313, C-2319, and C-2320 | Socket for V-2304, Unit 7 |
| XV-2305 thru XV-2325 | | Not Used | |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|----------------------------|---|--|-------------------------------|
| XV-2326 | | Same as XV-2002 | Socket for V-2326, Unit 8 |
| XV-2327 | | Same as XV-2153; incl C-2401, C-2402, and C-2403 | Socket for V-2327, Unit 8 |
| XV-2328 | | Same as XV-2153; incl C-2338, C-2398, and C-2400 | Socket for V-2328, Unit 8 |
| XV-2329 | | Same as XV-2101; incl C-2346, and C-2399 | Socket for V-2329, Unit 8 |
| XV-2330 | | Same as XV-2153; incl C-2350, C-2351, and C-2394 | Socket for V-2330, Unit 8 |
| XV-2331 | | Same as XV-2153; incl C-2380, C-2381, and C-2395 | Socket for V-2331, Unit 8 |
| XV-2332 | | Same as XV-2153; incl C-2385, C-2386, and C-2396 | Socket for V-2332, Unit 8 |
| XV-2333 | | Same as XV-2153; incl C-2389, C-2390, and C-2397 | Socket for V-2333, Unit 8 |
| XV-2334 | | Same as XV-2101; incl C-2408 and C-2409 | Socket for V-2334, Unit 8 |
| XV-2335 thru XV-2425 | | Not Used | |
| XV-2426 | | Same as XV-2153; incl C-2429, C-2445, and C-2502 | Socket for V-2426, Unit 9 |
| XV-2427 | | Same as XV-2153; incl C-2489, C-2490, and C-2503 | Socket for V-2427, Unit 9 |
| XV-2428 | | Same as XV-2153; incl C-2491, C-2492, and C-2504 | Socket for V-2428, Unit 9 |
| XV-2429 | | Same as XV-2153; incl C-2494, C-2495, and C-2505 | Socket for V-2429, Unit 9 |
| XV-2430 thru XV-2525 | | Not Used | |
| XV-2526 | | Same as XV-2101; incl C-2531 and C-2544 | Socket for V-2526, Unit 10 |
| XV-2527 | | Same as XV-2101; incl C-2533 and C-2545 | Socket for V-2527, Unit 10 |
| XV-2528 | | Same as XV-2153; incl C-2535, C-2536, and C-2546 | Socket for V-2528, Unit 10 |
| XV-2529 | | Same as XV-2153; incl C-2538, C-2539, and C-2547 | Socket for V-2529, Unit 10 |
| XV-2530 thru XV-2625 | | Not Used | |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|----------------------------|---|---|--------------------------------|
| XV-2626 | | Same as XV-2153; incl C-2627, C-2628, and C-2634 | Socket for V-2626, Unit 11A |
| XV-2627 | | Same as XV-2153; incl C-2633, C-2637, and C-2643 | Socket for V-2627, Unit 11A |
| XV-2628 | | Same as XV-2153; incl C-2636, C-2638, and C-2639 | Socket for V-2628, Unit 11A |
| XV-2629 | | Same as XV-2002 | Socket for V-2629, Unit 11A |
| XV-2630 thru XV-2650 | | Not Used | |
| XV-2651 | | Same as XV-2153; incl C-2754, C-2755, and C-2771 | Socket for V-2651, Unit 11B |
| XV-2652 | | Same as XV-2153; incl C-2757, C-2758, and C-2772 | Socket for V-2652, Unit 11B |
| XV-2653 | | Same as XV-2153; incl C-2760, C-2761, and C-2773 | Socket for V-2653, Unit 11B |
| XV-2654 | | Same as XV-2153; incl C-2763, C-2764, and C-2774 | Socket for V-2654, Unit 11B |
| XV-2655 thru XV-2800 | | Not Used | |
| XV-2801 | | Same as XV-2153; incl C-2890, C-2891, and C-2910 | Socket for V-2801, Unit 11C |
| XV-2802 | | Same as XV-2153; incl C-2893, C-2894, and C-2909 | Socket for V-2802, Unit 11C |
| XV-2803 | | Same as XV-2153; incl C-2896, C-2897, and C-2908 | Socket for V-2803, Unit 11C |
| XV-2804 | | Same as XV-2153; incl C-2899, C-2900, and C-2907 | Socket for V-2804, Unit 11C |
| XV-2805 thru XV-2916 | | Not Used | |
| XV-2917 | N16-S-62152-2631 | SOCKET, ELECTRON TUBE: 6 contacts, phosphor bronze, silver pl, S type; medium size, round shape; 1-1/4 in. diam, 0.420 in. h o/a dimen excluding term; steatite body; retainer ring mtg; 1.172 in. keyed chassis hole required; per BuShips RE13A524; CPH type 49-SS6M | Socket for V-2917 |
| XY-2001 | N16-S-62833-8849 | SOCKET, ELECTRON TUBE: 7 cadmium pl brass clip contacts; jumbo size; rectangular shape; 2-5/8 in. lg by 2-5/8 in. wd by 9/32 in. thk; steatite body; molded in plate; 2-7/8 in. chassis hole required, 4 mtg holes 0.174 in. diam spaced 1-7/8 in. by 1-7/8 in. c to c; clear glazed top and sides, cad pl steel spring, solder lug type term; CEJ part no. 122-237 | Socket for Y-2001, Unit 1 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|---|
| Y-2001 | N16-C-96177-3011 | CRYSTAL UNIT, QUARTZ: one crystal plate; nominal freq 100 kc; CADI part no. H22 crystal holder; 8 solid type pins in standard octal base located on bottom, 0.093 in. diam by 13/32 in. lg., cylindrical metal shield can, 3.240 in. lg by 2.050 in. diam; air gap not adjustable; hermetically sealed; crystal ground to such tolerance to obtain 100 kc exactly by slug tuning of coil in circuit, 7 pin base on stabilized heat oven, etched crystal plate, operating temp of oven 70°C ±1°; CADI type JKO-7 (stabilized heat unit) and type H-22 (crystal holder); CBTL part/dwg NL-960008-2 | Stabilizer Output of 100 kc Crystal, Unit 1 |
| Z-2001 | For Replacement Use N16-O-54121-2625 | OSCILLATOR, RADIO FREQUENCY: frequency range, 100 kc; four outputs, 11.5v into 5600 ohms, 0.44v into 3300 mmf, 6.4v into 10,000 ohms, 6.3v into 5600 ohms; crystal frequency control; power requirements 6.3v AC at 19 ma, 60 cycles, single ph, and 250v DC reg at 19 ma; external power supply; integral coils; 6-3/4 in. lg, 5-3/8 in. wd, 5-7/8 in. h o/a dimen; plugs into RFO chassis; includes crystal oven (temp network compensating); accurate to ±1.5 PPM over a temperature range of -20° C to +50° C and a humidity range of 0 to 100%; CBTL part/dwg NL-960223-14 | Unit 1 |
| Z-2002 thru Z-2030 | | Not Used | |
| Z-2031 | N17-T-81415-1626 | TRANSFORMER, RADIO FREQUENCY: 2 one pie universal windings, primary 75 μh/1000 cycles w/o slug and shield can, 78 turns no. 7/41 EF2 AWG Litz copper wire, 1.86 ohms, secondary 75 μh/1000 cycles w/o slug and shield can, 78 turns no. 7/41 EF2 Litz copper wire, 1.86 ohms; 500 kc peak frequency; untapped; shielded aluminum cylindrical can; 2-25/32 in. lg, 1.089 in. wd, 0.928 in. h o/a dimen; molded thermosetting plastic form, iron core inserted next to shield can; 2-7/32 in. lg, 0.828 in. diam o/a coil form dimen; adjustable iron slug w/shaft on either end of can; mtd by 2 no. 4-40 thd bolts 51/64 in. lg w/31/32 in. mtg/c; 4 solder lug type term located at one end of coil form; Z-2031 stamped on coil form and can; moisture and fungus proofed; CBTL part/dwg NL-960140-14-2; incl C-2034 and C-2035 | 500 kc Filter, Unit 2 |
| Z-2032 | N17-T-81430-1801 | TRANSFORMER, RADIO FREQUENCY: 2 windings, 2 pie universal wound; primary and secondary 75 μh/1000 cycles w/o slug and shield can, 78 turns no. 7/41 EF2 AWG Litz copper wire, 1.86 ohms; 1.0 mc peak frequency; untapped; shielded aluminum cylindrical can; 2-25/32 in. lg, 1.089 in. wd, 0.928 in. h o/a dimen; molded thermosetting plastic form; iron core next to can; 2-7/32 in. lg, 0.828 in. diam o/a dimen of coil form; adjustable screwdriver iron slug tuning from either end of can; mtd by 2 no. 4-40 thd bolts 51/64 in. lg w/31/32 in. mtg/c; 4 solder lug type term located at one end of coil form; Z-2032 stamped on coil and can; moisture and fungus proofed; CBTL part/dwg NL-960140-14-3; incl C-2039 and C-2040 | 1 mc Filter, Unit 2 |
| Z-2033 | N17-T-81430-1802 | TRANSFORMER, RADIO FREQUENCY: 2 windings, 2 pie universal wound, primary and secondary 75 μh/1000 cycles w/o slug and can, 78 turns no. 7/41 EF2 AWG Litz copper wire, 1.86 ohms; 1 mc peak frequency; untapped; shielded cylindrical aluminum can; 2-25/32 in. lg, 1.089 in. wd, 0.928 in. h o/a dimen; molded thermosetting plastic form; iron core next to can; 2-7/32 in. lg, 0.828 in. diam o/a dimen of coil form; adjustable screwdriver iron slug tuning from either end of can; | 1 mc Filter, Unit 2 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|-----------------------------------|
| Z-2033 (cont) | | mtd by 2 no. 4-40 thd bolts 51/64 in. lg w/31/32 in. mtg/c; 4 solder lug type term located at one end of coil form; Z-2033 stamped on coil and can; moisture and fungus proofed; CBTL part/dwg NL-960140-14-4; incl C-2041 | |
| Z-2034 | N16-A-33499-6870 | FREQUENCY MULTIPLIER: incoming frequency 100 kc, resultant frequency 1 mc; power requirements 6.3v AC at 1.0 amp, 60 cycles, single ph, 250v DC at 23 ma; five outputs 9.2v into 2200 ohms, 1.55v into 1000 ohms, 1.40v into 1000 ohms, 8.8v into 2200 ohms, 9.0v into 2200 ohms; RF input 11.5v into 5600 ohms; aluminum case; supersat finish; 7-1/2 in. lg, 3 in. wd, 4-9/16 in. h o/a dimen; plugs in RFO chassis; CBTL part/dwg NL-960108-14 | Unit 2 |
| Z-2035 thru Z-2050 | | Not Used | |
| Z-2051 | N16-N-66976-1004 | NETWORK, TEMPERATURE COMPENSATING: 4 solder lug term located on top of oven; melamine covers; 4-1/16 in. lg, 3 in. wd, 3-3/8 in. h o/a dimen; 2 mtg holes 0.173 in. diam on 1-7/8 in. mtg centers; CBTL part/dwg NL-959915-3; incl 400 ohm oven heater, C-2060, C-2061, L-2051, R-2051, R-2052, S-2054 | Temp Stability of Osc., Unit 3 |
| Z-2052 | N16-O-66002-4251 | OSCILLATOR SUB-ASSEMBLY: principal parts c/o capacitors, one 12 position rotary switch, 1 mtg panel; 4 in. lg, 4-1/8 in. h, 1-13/16 in. d o/a dimen; mtd by 4 pem fasteners w/3 in. mtg centers, panel is bent at right angles to a wd of 1/2 in. top and bottom; CBTL part/dwg NL-960241-12; incl C-2051, C-2052, C-2053, C-2054, C-2055, C-2056, C-2057, C-2058, C-2059, C-2066 and S-2051C | 1 kc Steps, Unit 3 |
| Z-2053 | N16-O-55006-1877 | OSCILLATOR, RADIO FREQUENCY: frequency range 90 to 100 kc, one band, 10 cps steps; 0.3v into 15 ohms power output; inductance capacity frequency control; power requirements 110v AC and 6.3v AC regulated, 60 cycles, single ph, and regulated 250v DC, external power supply; integral coils; 13 in. lg, 5-15/16 in. wd, 5-3/8 in. h; plugs in RFO chassis; accurate to ± 20 cps over temp and humidity range -20° C to +50° C; CBTL part/dwg NL-960225-25 | Unit 3 |
| Z-2054 thru Z-2100 | | Not Used | |
| Z-2101 | N17-T-81439-1201 | TRANSFORMER, RADIO FREQUENCY: 2 windings, single layer wound; primary and secondary 8.4 μ h at 3.95 mc w/o slug and can, 41 turns no. 34 EF2 AWG Litz copper wire; 4.0 mc peak frequency; untapped; cylindrical shielded aluminum can; 2-25/32 in. lg, 1.089 in. wd, 0.928 in. h o/a dimen; molded thermosetting plastic form, iron core next to can; 2-7/32 in. lg, 0.828 in. diam o/a dimen of coil form; adjustable screwdriver slug tuning from either end of can; mtd by 2 no. 4-40 thd bolts 51/64 in. lg w/31/32 in. mtg/c; 4 solder lug type term located at one end of coil form; Z-2101 stamped on coil form and can; moisture and fungus proofed; CBTL part/dwg NL-960140-14-6; incl C-2103 and C-2104 | 4 mc Filter, Unit 4 |
| Z-2102 | N17-T-81451-1311 | TRANSFORMER, RADIO FREQUENCY: 2 windings, single layer wound; primary and secondary 2.8 μ h/7.9 mc w/o slug and can, 19 turns no. 32 EF2 AWG Litz copper wire; 8.0 mc | 8 mc Filter, Unit 4 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|---------------------------------|
| Z-2102 | N17-T-81451-1311 | peak frequency; untapped; cylindrical aluminum shield can; 2-25/32 in. lg, 1.089 in. wd, 0.928 in. h o/a dimen; molded thermosetting plastic form, iron core next to can; 2-7/32 in. lg, 0.828 in. diam o/a dimen coil form; adjustable screwdriver iron slug tuning from either end of can; 2 no. 4-40 thd bolts 51/64 in. lg w/31/32 in. mtg/c; 4 solder lug type term located at one end; Z-2102 stamped on form and can; moisture and fungus proofed; CBTL part/dwg NL-960140-14-7; incl C-2107 | |
| Z-2103 | N16-A-33681-6350 | FREQUENCY MULTIPLIER: incoming frequency 1 mc, resultant frequency 8 mc; power requirements 6.3v AC at 0.35 amp, 60 cycles, single ph, 250v DC at 7 ma; power output 1.15v into 51 ohms; RF input 9.2v into 2200 ohms; aluminum case; supersat finish; 4-1/2 in. lg, 2-7/8 in. wd, 4-11/16 in. h o/a dimen; plugs in RFO chassis; CBTL part/dwg NL-960114-14 | Unit 4 |
| Z-2104 thru Z-2125 | | Not Used | |
| Z-2126 | N16-N-66976-1005 | NETWORK, TEMPERATURE COMPENSATING: 4 solder lug type term located on top of oven; melamine covers; 4-1/16 in. lg, 3 in. wd, 2-29/32 in. h o/a dimen; 4 mtg holes 0.128 in. diam countersunk for no. 4-40 FHMS; CBTL part/dwg NL-960323-3; incl C-2126, C-2127, C-2128, C-2130, C-2135, C-2137, L-2126, R-2126, R-2127, R-2128, R-2130, S-2126 | Temp. Stabilization, Unit 12 |
| Z-2127 | F16-O-55006-2498 | OSCILLATOR, RADIO FREQUENCY: incoming frequency 99.5 to 102.0 kc, frequency shift signal, one band, one channel, variable from 99.5 to 102.0 kc; power output 10.7v into 10,000 ohms; inductance capacity frequency control; power requirements 110v AC and regulated 6.3v AC at 0.75 amp, 60 cycles, single ph, regulated 250v DC, external power supply; integral coils; 9 in. lg, 3 in. wd, 4-1/4 in. h o/a dimen; plugs in RFO chassis; linear frequency shift by means of a reactor tube whose deviation is dependent on the input signal, receives keying or facsimile voltage from LLRM; CBTL part/dwg NL-960285-14 | Unit 12 |
| Z-2128 thru Z-2150 | | Not Used | |
| Z-2151 | N17-T-81430-4326 | TRANSFORMER, RADIO FREQUENCY: 2 windings, 2 pie universal wound; primary and secondary 75 μ h/1000 cycles w/o slug and can, 78 turns no. 7/41 EF2 AWG Litz copper wire, 1.86 ohms DC resistance; 1.1 mc peak frequency; untapped; cylindrical aluminum shield can; 2-25/32 in. lg, 1.089 in. wd, 0.928 in. h o/a dimen; molded thermosetting plastic form, iron core next to can; 2-7/32 in. lg, 0.828 in. diam o/a coil form dimen; adjustable screwdriver iron slug tuning from either end of can; mtd by 2 no. 4-40 thd bolts 51/64 in. lg w/31/32 in. mtg/c; 4 solder lug type term located at one end of form; Z-2151 stamped on form and can; moisture and fungus proofed; CBTL part/dwg NL-960140-14-9; incl C-2155 and C-2156 | 1.1 mc Filter, Unit 5 |
| Z-2152 | | Same as Z-2151; incl C-2157 and C-2158 | 1.1 mc Filter, Unit 5 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|--------------------------|
| Z-2153 | N17-T-81430-7026 | TRANSFORMER, RADIO FREQUENCY: 2 windings, 2 pie universal wound; primary and secondary 75 μ h/1000 cycles w/o slug and can, 78 turns no. 7/41 EF2 AWG Litz copper wire, 1.86 ohms; 1.2 mc peak frequency; untapped; cylindrical aluminum shield can; 2-25/32 in. lg, 1.089 in. wd, 0.928 in. h o/a dimen; molded thermosetting plastic form, iron core next to can; 2-7/32 in. lg, 0.828 in. diam o/a coil form dimen; adjustable screwdriver iron slug tuning from either end of can; 2 no. 4-40 thd bolts 51/64 in. lg w/31/32 in. mtg/c; 4 solder lug type term located at one end of coil form; Z-2153 stamped on coil and can; moisture and fungus proofed; CBTL part/dwg NL-960140-14-11; incl C-2159 and C-2160 | 1.2 mc Filter, Unit 5 |
| Z-2154 | | Same as Z-2153; incl C-2161 and C-2162 | 1.2 mc Filter, Unit 5 |
| Z-2155 | N17-T-81454-7026 | TRANSFORMER, RADIO FREQUENCY: two windings, single layer wound; primary and secondary 2.8 μ h/7.9 mc w/o slug and can, 19 turns no. 32 EF2 AWG copper wire; 9.2 mc peak frequency; untapped; cylindrical aluminum shield can; 2-25/32 in. lg, 1.089 in. wd, 0.928 in. h o/a dimen; molded thermosetting plastic form, iron core next to can; 2-7/32 in. lg, 0.828 in. diam o/a form dimen; adjustable screwdriver iron slug tuning from either end of can; mtd by 2 no. 4-40 thd bolts 41/64 in. lg w/31/32 in. mtg/c; 4 solder lug type term located at one end of form; Z-2155 stamped on coil form and can; moisture and fungus proofed; CBTL part/dwg NL-960140-14-13; incl C-2165 and C-2166 | 9.2 mc Filter, Unit 5 |
| Z-2156 | N17-T-81454-7027 | TRANSFORMER, RADIO FREQUENCY: two windings, single layer wound; primary and secondary 2.8 μ h/7.9 mc w/o slug and can, 19 turns no. 32 EF2 AWG copper wire; 9.2 mc peak frequency; untapped; cylindrical aluminum shield can; 2-25/32 in. lg, 1.089 in. wd, 0.928 in. h o/a dimen; molded thermosetting plastic form, iron core next to can; 2-7/32 in. lg, 0.828 in. diam o/a dimen of form; adjustable screwdriver iron slug tuning from either end of can; mtd by 2 no. 4-40 thd bolts 51/64 in. lg w/31/32 in. mtg/c; 4 solder lug type term located at one end of coil form; Z-2156 stamped on form and can; moisture and fungus proofed; CBTL part/dwg NL-960140-14-14; incl C-2176 | 9.2 mc Filter, Unit 5 |
| Z-2157 | | Same as Z-2153; incl C-2179 and C-2180 | 1.2 mc Filter, Unit 5 |
| Z-2158 | N16-C-90869-9301 | CONVERTER, FREQUENCY, ELECTRONIC: incoming frequencies 1 mc, 100 kc or 100 kc \pm frequency shift signal, 90 to 100 kc, 8 mc; resultant frequencies 9.19 to 9.20 mc in 10 cycle steps; power requirements 6.3v AC, 60 cycles, single ph, 250v DC and -24v DC; power output 1.0v into 51 ohms; five RF inputs, 1.15v into 51 ohms, 1.55v into 1000 ohms, 0.44v into 3300 mmf, 0.3v into 150 ohms, 10.7v into 10,000 ohms; aluminum case, supersat finish, 13 in. lg, 4-3/4 in. wd, 5 in. h o/a dimen; plugs in RFO chassis, CBTL part/dwg NL-960283-25 | Unit 5 |
| Z-2159 thru Z-2200 | | Not Used | |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------|---|--|--------------------------------|
| Z-2201 | N16-C-76853-2573 | <p>COIL, RADIO FREQUENCY: 410 μh/1000 cycles w/o slug and can, 6.5 ohms DC; 250 turns no. 7/41 EF2 AWG Litz copper wire, single enamel double polyamide fiber covered, one winding, 1 pie universal wound, untapped, cylindrical aluminum shield can, molded thermosetting plastic form, iron core next to can; 2-25/32 in. lg, 0.928 in. diam o/a dimen; 2-7/32 in. lg, 0.828 in. diam o/a coil form dimen; adjustable screwdriver iron slug tuning from one end of can; 4 solder lug type term located at one end of can; mtd by 2 no. 4-40 thd bolts 51/64 in. lg w/31/32 in. mtg/c; Z-2201 stamped on coil form and can; moisture and fungus proofed; CBTL part/dwg NL-960140-14-17; incl C-2218</p> | (210-300) kc Main Tank, Unit 6 |
| Z-2202 | N16-C-76794-8812 | <p>COIL, RADIO FREQUENCY: 36 μh/1000 cycles w/o slug, 1.3 ohms DC resistance; 56 turns no. 7/41 EF2 AWG Litz copper wire, single enamel, double polyamide fiber covered conductor, one winding, 1 pie universal wound, untapped, cylindrical aluminum shield can, molded thermosetting plastic form, iron core next to can; 2-25/32 in. lg, 0.928 in. diam coil dimen excluding term, mtg and tuning devices; 2-7/32 in. lg, 0.828 in. diam o/a coil form dimen; adjustable screwdriver iron slug tuning located at one end of can; mtd by 2 no. 4-40 thd bolts 51/64 in. lg w/31/32 in. mtg/c; Z-2202 stamped on form and can; moisture and fungus proofed; CBTL part/dwg NL-960140-14-18; incl C-2230</p> | (1.21-1.3) mc Filter, Unit 6 |
| Z-2203 | | Same as Z-2202; incl C-2234 | (1.21-1.3) mc Filter, Unit 6 |
| Z-2204 | N16-C-90869-9303 | <p>CONVERTER, FREQUENCY, ELECTRONIC: incoming frequencies 100 kc, 1 mc, 9.19 to 9.20 mc; resultant frequencies 10 kc, 10.4 to 10.5 mc in 10 cycle steps and 210-300 kc in 10 kc steps; power requirements 6.3v AC and 6.3v AC regulated, 60 cycles, single ph, 250v DC and regulated 250v DC, power output 1.0v into 51 ohms, three RF inputs 6.4v into 10,000 ohms, 1.4v into 1000 ohms, 1.0v into 51 ohms; aluminum case; supersat finish; 14-7/8 in. lg, 5-3/8 in. wd, 4-3/4 in. h o/a dimen; plugs in RFO chassis; CBTL part/dwg NL-960293-25</p> | Unit 6 |
| Z-2205 thru Z-2300 | | Not Used | |
| Z-2301 | N17-T-81442-1626 | <p>TRANSFORMER, RADIO FREQUENCY: two windings, single layer wound, primary 5.5 μh at 3.95 mc w/o slug and shield can, secondary 5.5 μh at 3.95 mc w/o slug and shield can, primary 33 turns no. 32 EF2 AWG copper wire, secondary 33 turns no. 32 EF2 AWG copper wire; 5 mc peak frequency; untapped; cylindrical shield can, aluminum; 2-25/32 in. lg, 1.089 in. wd, 0.928 in. h o/a; molded thermosetting plastic form, iron core inserted next to shield can; o/a coil form dimen 2-7/32 in. lg, 0.828 in. diam; adjustable iron slug, screwdriver adjustment, adjusted by shaft on either end of can; two no. 4-40 threaded spade mtg bolts 51/64 in. lg, w/31/32 in. mtg/c; 4 term, solder lug type, located on one end of coil form; part no. Z-2301 stamped on coil form and shield can; coils moisture and fungus proofed; CBTL part/dwg NL-960140-14-23; includes C-2303 and C-2304</p> | 5 mc Filter, Unit 7 |
| Z-2302 | N17-T-81442-1627 | <p>TRANSFORMER, RADIO FREQUENCY: two windings, single layer wound, primary 5.5 μh at 3.95 mc w/o slug and shield can, secondary 5.5 μh at 3.95 mc w/o slug and shield can,</p> | 5 mc Filter, Unit 7 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|------------------------------------|
| Z-2302 (cont) | | primary 33 turns no. 32 EF2 AWG copper wire, secondary 33 turns no. 32 EF2 AWG copper wire; 5 mc peak frequency; untapped; cylindrical shield can, aluminum; 2-25/32 in. lg, 1.089 in. wd, 0.928 in. h o/a; molded thermosetting plastic form, iron core inserted next to shield can; o/a coil form dimen 2-7/32 in. lg, 0.828 in. diam; adjustable iron slug, screwdriver adjustment, adjusted by shaft on either end of can; two no. 4-40 thd spade mtg bolts 51/64 in. lg w/31/32 in. mtg/c; 4 term, solder lug type, located on either end of coil form; Z-2302 stamped on coil form and shield can; coils moisture and fungus proofed; CBTL part/dwg NL-960140-14-24; includes C-2307 | |
| Z-2303 | N17-T-81458-6126 | TRANSFORMER, RADIO FREQUENCY: two windings, single layer wound, primary 1.19 μ h at 12.5 mc w/o slug and shield can, secondary 1.19 μ h at 12.5 mc w/o slug and shield can, primary 10 turns no. 32 EF2 AWG copper wire, secondary 10 turns no. 32 EF2 AWG copper wire; 15 mc peak frequency; untapped; cylindrical shield can, aluminum; 2-25/32 in. lg, 1.089 in. wd, 0.928 in. h o/a; molded thermosetting plastic form, iron core inserted next to shield can; o/a coil form dimen 2-7/32 in. lg, 0.828 in. diam; adjustable iron slug screwdriver adjustment, adjusted by shaft on either end of can; two no. 4-40 thd spade mtg bolts 51/64 in. lg w/31/32 in. mtg/c; 4 term, solder lug type, located on one end of coil form; Z-2303 stamped on coil form and shield can; coils moisture and fungus proofed; CBTL part/dwg NL-960140-14-25; incl C-2317 and C-2318 | 15 mc Filter, Unit 7 |
| Z-2304 | N17-T-81458-6127 | TRANSFORMER, RADIO FREQUENCY: two windings, single layer wound, primary 1.19 μ h at 12.5 mc w/o slug and shield can, secondary 1.19 μ h at 12.5 mc w/o slug and shield can, primary 10 turns no. 32 EF2 AWG copper wire, secondary 10 turns no. 32 EF2 AWG copper wire; 15 mc peak frequency; untapped; shielded; cylindrical shield can, aluminum; 2-25/32 in. lg, 1.089 in. wd, 0.928 in. h o/a; molded thermosetting plastic form, iron core inserted next to shield can; o/a coil form dimen 2-7/32 in. lg, 0.828 in. diam; adjustable iron slug, screwdriver adjustment, adjusted by shaft on either end of can; two no. 4-40 thd spade mtg bolts 51/64 in. lg w/31/32 in. mtg/c; 4 term, solder lug type, located on one end of coil form; Z-2304 stamped on coil form and shield can; coils moisture and fungus proofed; CBTL part/dwg NL-960140-14-26; incl C-2321 | 15 mc Filter, Unit 7 |
| Z-2305 | N16-A-33798-6960 | FREQUENCY MULTIPLIER: incoming frequency 1 mc, resultant frequency 5 and 15 mc; power requirements 6.3v AC at 0.7 amp, 60 cycles, single ph, 250v DC at 23 ma; two outputs, 1.55v into 51 ohms, 2.35v into 48 ohms; RF input 8.8v into 2200 ohms; aluminum case, supersat finish; 5-3/8 in. lg, 4-3/8 in. wd, 4-11/16 in. h o/a dimen; plugs in RFO chassis; CBTL part/dwg NL-960091-14 | Unit 7 |
| Z-2306 thru Z-2325 | | Not Used | |
| Z-2326 | N16-C-76792-5211 | COIL, RADIO FREQUENCY: 31 μ h/1000 cycle w/o slug and can, 1.24 ohms DC resistance; 51 turns no. 7/41 EF2 AWG Litz copper wire, one winding, 1 pie universal wound; untapped; cylindrical aluminum shield can; molded thermosetting plastic form; iron core inserted next to shield can; 2-25/32 in. lg, 0.928 in. diam o/a; coil form dimen 2-7/32 in. lg, 0.828 in. | (1.6-2.5) mc Tuned Circuit, Unit 8 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|------------------------------|
| Z-2326 (cont) | | diam; adjustable tuning; adjustable iron slug, screwdriver adjustment located at top of can; 4 solder lug type term located at one end of can; 2 no. 4-40 thd spade mtg bolts 51/64 in. lg w/31/32 in. mtg/c; Z-2326 stamped on coil form and shield can; moisture and fungus proofed; CBTL part/dwg NL-960140-14-28; incl C-2340 | |
| Z-2327 | N17-T-81462-2526 | TRANSFORMER, RADIO FREQUENCY: two windings, single layer wound, primary and secondary each 0.66 μ h at 12.5 mc w/o slug and can, 6-1/2 turns no. 32 EF2 AWG copper wire; 27 to 28 mc frequency range; untapped; shielded cylindrical aluminum can; 2-25/32 in. lg, 1.089 in. wd, 0.928 in. h; molded thermosetting plastic form; iron core inserted next to can; o/a coil form dimen 2-7/32 in. lg, 0.828 in. diam; adjustable iron slug tuning, screwdriver adjustment at each end of can; 2 no. 4-40 thd spade mtg bolts 51/64 in. lg w/31/32 in. mtg/c; 4 solder lug type term located on one end of coil form; Z-2327 stamped on form and can; moisture and fungus proofed; CBTL part/dwg NL-960140-14-29; incl C-2383, C-2384 | (27-28) mc Filter, Unit 8 |
| Z-2328 | | Same as Z-2327; incl C-2387, C-2388 | (27-28) mc Filter, Unit 8 |
| Z-2329 | N17-T-81462-2527 | TRANSFORMER, RADIO FREQUENCY: two windings, single layer wound, primary and secondary 0.66 μ h at 12.5 mc w/o slug and can, 6-1/2 turns no. 32 EF2 AWG copper wire; frequency range of 27 to 28 mc; untapped; aluminum cylindrical shield can; 2-25/32 in. lg, 1.089 in. wd, 0.928 in. h o/a dimen; molded thermosetting plastic form, iron core next to can; 2-7/32 in. lg, 0.828 in. diam o/a coil form dimen; screwdriver, adjustment from either end of can; 2 no. 4-40 thd spade mtg bolts 51/64 in. lg w/31/32 in. mtg/c; 4 solder lug type term located at one end of coil form; Z-2329 stamped on form and can; moisture and fungus proofed; CBTL part/dwg NL-960140-14-31; incl C-2391 | (27-28) mc Filter, Unit 8 |
| Z-2330 | N16-C-90869-9302 | CONVERTER, FREQUENCY, ELECTRONIC: incoming frequencies 100 kc, 15 mc, and 10.4 to 10.5 mc, resultant frequencies, 27 to 28 mc in 10 cycle steps, 1.6 to 2.5 mc in 100 kc steps; power requirements 6.3v AC and regulated 6.3v AC, 60 cycles, single ph, 250v DC and regulated 250v DC; power output 1.3v into 51 ohms; three RF inputs, 6.3v into 5,600 ohms, 1.55v into 51 ohms, 1.0v into 51 ohms; aluminum case, supersat finish; 11-3/4 in. lg, 4-1/2 in. wd, 7 in. h o/a dimen; plugs in RFO chassis; CBTL part/dwg NL-960363-25 | Unit 8 |
| Z-2331 thru Z-2425 | | Not Used | |
| Z-2426 | N16-C-90869-9300 | CONVERTER, FREQUENCY, ELECTRONIC: incoming frequencies 5 mc, 27 to 28 mc, resultant frequencies 22 to 38 mc in 10 cycle steps; power requirements 6.3v AC, 60 cycles, single ph, 250v DC; power output 2.35v into 51 ohms; two RF inputs, 1.3v into 51 ohms, 2.45v into 48 ohms; aluminum case, supersat finish; 8-11/16 in. lg, 5-13/16 in. wd, 5 in. h o/a dimen; plugs in RFO chassis; CBTL part/dwg NL-959889-14 | Unit 9 |
| Z-2427 thru Z-2525 | | Not Used | |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|---|-------------------|
| Z-2526 | N17-F-99999-0134 | FREQUENCY MULTIPLIER: 1 mc incoming frequency, resultant frequencies, 7, 8, 13, 14, 16, 17, 18, 19, 20, 21 and 22 mc; power requirements 6.3v AC, 60 cycles, single ph, 250v DC; power output 0.8v into 51 ohms; RF input 9.0v into 2200 ohms; aluminum case, supersat finish; 10-1/4 in. lg, 5 in. wd, 5-3/4 in. h o/a dimen; plugs in RFO chassis; CBTL part/dwg NL-960328-14 | Unit 10 |
| Z-2527 thru Z-2625 | | Not Used | |
| Z-2626 | N16-C-90869-9304 | CONVERTER, FREQUENCY, ELECTRONIC: incoming frequencies 7, 8, 13, 14, 16, 17, 18, 19, 20, 21, 22 mc and 22 to 38 mc in 10 cycle steps, resultant frequencies 0.3 to 6.0 mc in 10 cycle steps; power requirements 6.3v AC, 60 cycles, single ph, 250v DC; power output 3.6v into 51 ohms; two RF inputs, 1.9v into 51 ohms, 0.64v into 51 ohms; aluminum case, supersat finish; 8-3/4 in. lg, 2-7/8 in. wd, 3-5/8 in. h o/a dimen; plugs in RFO chassis; CBTL part/dwg NL-960184-14 | Unit 11A |
| Z-2627 thru Z-2650 | | Not Used | |
| Z-2651 | N16-C-90869-9299 | CONVERTER, FREQUENCY, ELECTRONIC: incoming frequencies 7, 8, 13, 14, 16, 17, 18, 19, 20, 21, 22 mc and 27 to 28 mc in 10 cycle steps, resultant frequencies 6 to 16 mc in 10 cycle steps; power requirements 6.3v AC, 60 cycles, single ph, 250v DC; power output 1.9v into 51 ohms; two RF inputs, 0.75v into 51 ohms, 2.1v into 51 ohms; aluminum case, supersat finish; 9-3/4 in. lg, 5-13/16 in. wd, 5 in. h o/a dimen; plugs in RFO chassis; CBTL part/dwg NL-960206-14 | Unit 11B |
| Z-2652 thru Z-2800 | | Not Used | |
| Z-2801 | N16-C-90869-9305 | CONVERTER, FREQUENCY, ELECTRONIC: incoming frequencies 7, 8, 13, 14, 16, 17, 18, 19, 20, 21, 22 mc and 22 to 38 mc in 10 cycle steps, resultant frequencies 16 to 20 mc in 10 cycle steps; power requirements 6.3v AC, 60 cycles, single ph, 250v DC; power output 4.2v into 51 ohms; two RF inputs, 0.74v into 51 ohms, 1.75v into 51 ohms; aluminum case, supersat finish; 8-15/32 in. lg, 5-13/16 in. wd, 5 in. h o/a dimen; plugs in RFO chassis; CBTL part/dwg NL-960172-14 | Unit 11C |
| Z-2802 thru Z-2900 | | Not Used | |
| Z-2901 | F16-R-400984-105 | RACK, ELECTRICAL EQUIPMENT: steel, w/aluminum front and sides, various shape members, riveted; enameled; grey; 23-1/8 in. lg, 13-5/8 in. wd, 17-7/8 in. h. o/a dimen; panel mtd by means of holes drilled and tapped at various spacings; mounted on slides; includes band switch assembly, voltage test point socket, zero beat indicator circuit, electron ray indicator tube, oscilloscope test jacks, filament voltage regulator, 3 filament transformers; wired; mounts bearings, sprockets, idlers, chains and couplers, has linkages and shafts mechanically connecting knobs on front panel with RFO sub-units; CBTL part/dwg NL-960410-27 | Unit 14 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------|---|--|-------------------------------------|
| 3001-3099 | F16-P-68408-2451 | POWER SUPPLY, PP-1094/SRT: electronic and metallic type rectification; full wave; output data +300v DC, 200 ma, +250v DC, 200 ma; -24v DC, 4 amps, -220v DC, 115 ma; input data 115v AC, 60 cyc, single ph; o/a dimen 25-1/4 in. lg, 16 in. wd, 7-15/32 in. h; filter incl; drawer mtd; p/o AN/SRT-14, 15, 16; CBTL part/dwg NL-981206-14 | |
| C-3001 | For Replacement Use N16-C-20811-5421 | CAPACITOR, FIXED, ELECTROLYTIC: 1 section; 800 mf; 50v DCW; per spec JAN-C-62; JAN type CE51E801G | Filter for Control 24v Power Supply |
| C-3002 | | Same as C-3001 | Filter for Control 24v Power Supply |
| C-3003 | | Not Used | |
| C-3004 | N16-C-21944-6026 | CAPACITOR, FIXED, ELECTROLYTIC: 2 sections; 35-35 mf; 450v DCW; per spec JAN-C-62; JAN type CE52E350R | |
| C-3004A | | p/o C-3004 | Filter for 250v Power Supply |
| C-3004B | | p/o C-3004 | Filter for 250v Power Supply |
| C-3005 | | Same as C-1036 | Filter for 300v Power Supply |
| C-3006 | | Same as C-1036 | Filter for 300v Power Supply |
| C-3007 | | Same as C-1036 | Filter for 300v Power Supply |
| C-3008 | | Same as C-1036 | Filter for 300v Power Supply |
| C-3009 | | Not Used | |
| C-3010 | | Same as C-1036 | Filter for 220v Power Supply |
| C-3011 | N16-C-49981-9993 | CAPACITOR, FIXED, PAPER DIELECTRIC: 4 mf; 600v DCW; per spec JAN-C-25; JAN type CP41B1DF405V | Relay Holding Capacitor |
| CR-3001 | N17-R-51071-1358 | RECTIFIER, METALLIC: selenium, single ph full wave CT circuit, MBCA Ref Dwg Group 23; 39v AC input at 35° C, ambient per arm; 30v DC new and 28v DC aged output, 9.5 amp, self-cooled, resistive or inductive load, 35° C, ambient; rectangular shape, dimen less term 5 in. wd, 4-3/8 in. lg, 6-1/8 in. h o/a; three 0.193 in. diam mtg holes each bracket spaced 1 in. c to c, two brackets; three solder lug type term 3/4 in. lg located on each end; salt spray-resistant coating, tropicalized per JAN-T-152, forced air cooling; CFT type no. 135D4985; CBTL part/dwg NL-982585-1 | -24v Control Power Supply Rectifier |
| E-3001 thru E-3010 | | Not Used | |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|-------------------------------|
| E-3011 | Low Failure Item | TERMINAL BOARD: melamine glass sheet type GMG; incl 8 double turret lug type term; w/o barriers; o/a dimen 2-9/16 in. lg, 1-3/4 in. wd, 15/32 in. thk approx; two 0.169 in. diam mtg holes 2-1/16 in. c to c; term silver pl; used to mt R-3010, R-3011, R-3012, R-3013; CBTL part/dwg NL-981138-1 | Component Mounting |
| E-3012 | Low Failure Item | TERMINAL BOARD: c/o term board, fuse clips, and 4 spacers; material of board melamine glass sheet type GMG; incl 6 fuse clip type term soldered to solder lug term and screw mtd; w/o barriers; o/a dimen 4-15/16 in. lg, 3-3/4 in. wd, 1-7/8 in. thk approx; four no. 8-32 thd mtg holes on 1-3/8 in. by 2-3/16 in. mtg/c; used to mt R-3007, R-3008, R-3009; CBTL part/dwg NL-981221-2 | Component Mounting |
| E-3013 | Low Failure Item | INSULATION SLEEVING, ELECTRICAL: rigid; laminated phenolic, form Tr, type LTS-E4 amended no. 3, per spec MIL-P-79; 1.406 in. ID; 0.11 in. wall thickness, 4.438 in. lg o/a; w/laminated phenolic top cover; CBTL part/dwg NL-981216-1; same as E-1020 | u/w C-3001 |
| E-3013.1 | | Same as E-3013 | u/w C-3002 |
| F-3001 | N17-F-14578-0050 | FUSE, CARTRIDGE: 10 amp, 125v; time delay, 150% for 0-1 minute, 300% for 6 second min; ferrule type; silver pl; fiber body; one time; non-indicating; 1-1/2 in. lg by 0.406 in. diam; per spec MIL-F-15160A; MIL type FO9D10ROB (four spares for F-3001 incl in equipment) | Space Heater Protection |
| F-3002 | | Same as F-3001 | Space Heater Protection |
| F-3003 | N17-F-14690-5875 | FUSE, CARTRIDGE: 5 amp, 250v; time delay, 150% for 0-1 minute, 300% for 6 second min; ferrule type; silver pl; fiber body; one time; non-indicating; 1-1/2 in. lg by 0.406 in. diam; per spec MIL-F-15160A; MIL type FO9G5R00B (four spares for F-3003 incl in equipment) | Fused Line Protection |
| F-3004 | | Same as F-3003 | Fused Line Protection |
| F-3005 | For Replacement Use N17-F-17449-50 | FUSE, CARTRIDGE: 15 amp, 250v max; normal blowing time, 150% for 0-1 minute, 300% for instantaneous; o/a dimen 1-1/2 in. lg, 13/32 in. diam; per spec MIL-F-15160A; MIL type FO9G15ROA (three spares for F-3005 incl in equipment) | Main AC Line Protection |
| F-3006 | | Same as F-3005 | Main AC Line Protection |
| F-3007 | N17-F-14690-5775 | FUSE, CARTRIDGE: 1 amp, 250v AC; time delay; 150% for 0-1 minute, 300% for 6 second minimum; ferrule type, silver pl; 1-1/2 in. lg, 0.406 in. diam; fiber body; one time; non-indicating; vibration resistant; per spec MIL-F-15160A; MIL type FO9G1ROOB; same as F-503 | Start-Stop Current Protection |
| F-3008 | | Same as F-3007 | Start-Stop Current Protection |
| F-3009 | | Same as F-3003 | T-3001 Protection |
| F-3010 | | Same as F-3001 | -24v Control Line Protection |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--|
| H-3001 | Low Failure Item | SLIDE, chassis: left hand, c/o inner and outer slide, front latch, ball spacer w/stainless steel balls, and pin stop; corrosion resisting steel, electropolish finish; 23-1/8 in. lg closed, 1-5/8 in. h, 9/16 in. wd o/a; nine 0.169 in. diam mtg holes, countersunk, spaced 2-1/2 in. c to c, two 1/4 in. -28 NF-2 thd mtg holes spaced 1 in. c to c located on back end; CBTL part/dwg NL-900037-12-2; same as H-501 | For LVPS Chassis |
| H-3002 | Low Failure Item | SLIDE, chassis: right hand; c/o inner and outer slide, front latch, ball spacer w/stainless steel balls, and pin stop; corrosion resisting steel, electropolish finish; 23-1/8 in. lg closed, 1-5/8 in. h, 9/16 in. wd o/a; nine 0.169 in. diam mtg holes, countersunk, spaced 2-1/2 in. c to c; two 1/4 in. -28 NF-2 thd mtg holes, 1 in. c to c located on back end; CBTL part/dwg NL-900037-12-1; same as H-502 | For LVPS Chassis |
| H-3003 | N16-C-300798-866 | CLAMP, tube: stainless steel; c/o strap w/clip and bracket; 1 hole in bracket for no. 10 machine screw for mtg; 1-3/8 in. diam by 3/4 in. h o/a; CAIS type 926-C; same as H-1005. | u/w V-3001 |
| H-3003.1 | | Same as H-3003 | u/w V-3002 |
| H-3003.2 | | Same as H-3003 | u/w V-3003 |
| H-3004 | N17-C-99999-489 | CLAMP, tube: stainless steel; c/o strap w/clip and bracket; one hole in bracket for no. 10 machine screw for mtg; 1.625 in. diam by 7/8 in. h o/a; CAIS type 926-H-5; same as H-1001 | u/w C-3001 |
| H-3004.1 | | Same as H-3004 | u/w C-3002 |
| H-3005 | Procured on demand by nearest Naval Shore Supply Activity | WRENCH: straight, 7/32 in. hex key, 4 in. lg; o/a dimen 4-1/2 in. lg, 4-1/2 in. wd; alloy steel, nickel pl; flat "T" handle w/no. 6-32 socket hd steel set screw; CAYT type no. 609-732T; CBTL part/dwg NL-983010-1 | For Securing Fasteners on Front Panels |
| H-3006 | Procured on demand by nearest Naval Shore Supply Activity | GROMMET, RUBBER: synthetic rubber, per MIL-G-3036; style no. 1, MBCA Ref Dwg Group 156, Section A; o/a dimen 1-1/16 in. OD of large flange, 13/16 in. OD of groove, 1/8 in. thk flange, 1/2 in. diam hole; 3/8 in. o/a h, 1/8 in. wd groove; hot oil and coolant resistant; MIL type AN931-A8-13 modified; CBTL part/dwg NL-901547-1 | Wire Protector |
| H-3006.1 | | Same as H-3006 | Wire Protector |
| H-3006.2 | | Same as H-3006 | Wire Protector |
| H-3006.3 | | Same as H-3006 | Wire Protector |
| H-3007 | Procured on demand by nearest Naval Shore Supply Activity | GROMMET, RUBBER: synthetic rubber, per MIL-G-3036; style no. 1, MBCA Ref Dwg Group 156, Section A; o/a dimen 1-5/8 in. OD of large, flange, 1-1/4 in. OD of groove, 1/8 in. thk flange, 7/8 in. diam hole, 3/8 in. o/a h, 1/8 in. wd groove; hot oil and coolant resistant; MIL type AN931-A14-20 modified; CBTL part/dwg NL-901548-1 | Wire Protector |
| H-3007.1 | | Same as H-3007 | Wire Protector |
| H-3007.2 | | Same as H-3007 | Wire Protector |
| I-3001 | N17-L-3917-300 | LAMP, INCANDESCENT: 125v DC, 6 w; MBCA Ref Dwg Group 7, double contact bayonet candelabra base, S-6, clear, 1 tungsten filament, C-7A; 1-13/16 in. max o/a h; over 25 hrs rated | Power "On" |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|------------------------|
| I-3001 (cont) | | life; any burning position; CAYZ type no. 6S6DC-125; same as I-501 | |
| I-3002 | N17-L-6491-63 | LAMP, INCANDESCENT: 28v, 0.035 amp; special 952 base w/ 5/16 in. -32 NEF-2 thread and knurled sleeve, T-1-3/4, cloudy, red color plastic cap, 1 tungsten filament, C-21; 3/4 in. max o/a h; over 25 hrs rated life; any burning position; CG type 320R, dwg no. 165-22-327E | Time Delay "On" |
| I-3003 | N17-L-6806-130 | LAMP, GLOW: neon, 105-125v, 1/25 w; MBCA Ref Dwg Group 7, single contact bayonet candelabra base, T-3-1/4, clear, orange-red glow; 1-3/16 in. max o/a h; CG type NE-51; same as I-503 | Cabinet Heater "on" |
| I-3004 | | Same as I-3003 | +250v "ON" |
| I-3005 | | Same as I-3003 | +300v "ON" |
| I-3006 | | Same as I-3003 | -220v "ON" |
| I-3007 | | Same as I-3003 | Interlock Battle Short |
| J-3001 | N17-C-99999-2015 | CONNECTOR, RECEPTACLE, ELECTRICAL: consists of double row of 8 sliding contacts per row, male, flat; 2-7/16 in. lg, 7/8 in. wd, 9/16 in. h excluding contacts and term; w/ partially enclosed plastic shell; polarized; non-locking; 5 amp, 600v DC; mtd by two 0.125 in. diam holes in diagonal corners, spaced 2.024 in. c to c in lg and 0.460 in. c to c in wd; CPH type 26-159-16; same as P-401 | Inter-Unit Wiring |
| J-3002 | | Same as J-3001 | Inter-Unit Wiring |
| J-3003 | | Same as J-3001 | Inter-Unit Wiring |
| J-3004 | N17-C-73107-5183 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female; straight type; phone type connector; dielectric green nylon; 29/32 in. lg, 5/16 in. wd incl hex coupling nut o/a dimen; 1000v peak; w/inclosing shell, cylindrical shape, brass, nickel pl; not polarized, 1 hole, 1/4 in. diam; 1/4 in. -32 thd on receptacle for mating w/coupling nut; CARO part 225D; same as J-1606 | Test Point -220v |
| J-3005 | N17-C-99999-1196 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female; straight type; phone type connector; dielectric red nylon; 29/32 in. lg, 5/16 in. wd incl hex coupling nut o/a dimen; 1000v peak w/inclosing shell, cylindrical shape, brass, nickel pl; not polarized, 1 hole, 1/4 in. diam; 1/4 in. -32 thd on receptacle for mating w/coupling nut; CARO part 225A; same as J-504 | +250v Test Point |
| J-3006 | | Same as J-3005 | +300v Test Point |
| J-3007 | N17-C-99999-1197 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female; straight type; phone type connector; dielectric blue nylon; 29/32 in. lg, 5/16 in. wd incl hex coupling nut o/a dimen; 1000v peak; w/inclosing shell, cylindrical shape, brass, nickel pl; not polarized, 1 hole, 1/4 in. diam; 1/4 in. -32 thd on receptacle for mating w/coupling nut; CARO part 225G | Interlock Test |
| J-3008 | | Same as J-3007 | Interlock Test |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|---------------------------------|
| K-3001 | N17-R-99999-0851 | RELAY, SOLENOID: 4PST, normally open, double break, 115v AC, 20 amp non-inductive current; one winding, 75 ±10% ohms resistance of winding, 0.156 amp operating current, 60 cyc; 8 term for contacts, 2 term for coil; 4-3/4 in. wd, 5-1/2 in. lg, 3 in. d; mtd by four holes 0.221 in. diam located in mtg board spaced 4-3/4 in. by 4 in. c to c; CPB part 3319-2: CBTL part/dwg NL-900047-12 | Master Control Relay |
| K-3002 | | Not Used | |
| K-3003 | N17-R-99999-0857 | RELAY, MOTOR DRIVEN: TPDT, normally closed, contacts microswitch 3C arrangement, MBCA Ref Dwg Group 4, contacts 250v DC, 1/4 amp; switch no. 1 24v DC, 5 amp, switch no. 2 24v DC, 1 amp, switch no. 3 110v AC, 5 amp, 50/60 cps; 1 rpm 24v DC gear train motor w/clutch; 2 solder lug term for motor, 9 screw term for contacts; adjustable type, operating range for 24v ±10%, -20°C to +65°C, 18.7 seconds to 46.6 seconds time delay on switch no. 2 and no. 3, switch no. 1 to operate 0.7 seconds to 5 seconds after switches no. 2 and no. 3; 0-9 seconds dial range; reset facilities not provided; 5-1/16 in. lg, 3-1/32 in. wd, 2-31/32 in. h o/a dimen excluding term; mts by four no. 6-32 elastic stop nuts on 3-17/64 in. by 1-3/4 in. mtg/c; moisture and fungus resistant; CHP part/dwg 5153-002; CBTL part/dwg NL-980986-1, incl R-3025 and R-3026 | Time Delay |
| K-3004 | N17-R-65144-1150 | RELAY, ARMATURE: contact arrangement 4A2B, MBCA Ref Dwg Group 4, single break; 1 inductive winding, 24v DC operating voltage; 2 term on contact, 2 term on coil; continuous duty; 2-1/2 in. lg, 1 in. wd, 1-7/8 in. h o/a dimen; mtd by means of 4 no. 6-32 tapped holes, 3/4 in. horizontal centers, 7/8 in. vertical centers; CSD type 218 frame part no. 218DXB103, dwg no. 17593; CBTL part/dwg NL-982599-1; same as K-503 | Rectifier Plate Switching Relay |
| K-3005 | N17-R-65155-6222 | RELAY, ARMATURE: contact arrangement 2C, Ref Dwg Group 4, 115v AC, 5 amp; 1 inductive winding, 140 ohms DC, 24v operating voltage, 0.130 amps operating current; 2 term on contact, 2 term on coil; continuous duty; 1-3/4 in. lg, 1 in. wd, 2-1/16 in. h o/a dimen; mtd by six no. 6-32 tapped mtg holes 3/4 in. c to c, 2 holes on one side, four on bottom; CSD type no. 218XBX; CBTL part/dwg NL-982577-1; same as K-501 | "Stand-By" Relay |
| L-3001 | N16-R-29915-5094 | REACTOR: swinging choke; one section; three hy min o/a inductance, 0.023 amp min DC current, 12 hy max o/a inductance, 0.230 amp max AC current; 85 ohms DC resistance; 1840v RMS test voltage; hermetically sealed steel case; o/a dimen 3-13/32 in. diam approx, 4-1/8 in. lg; four 0.201 in. diam mtg holes spaced 2-11/16 in. by 2-11/16 in. mtg/c on 3-13/32 in. sq mtg flange; two solder lug type term on insulators 1/2 in. lg, 7/16 in. diam o/a, located on mtg surface; CUT part/dwg no. F-3574; CBTL part/dwg NL-980692-1 | Filter 300v Power Supply |
| L-3002 | N16-R-29955-2250 | REACTOR: swinging choke; single section; 10 hy min o/a inductance, 0.0125 amp min DC current, 40 hy max o/a inductance, 0.125 amp max DC current; 135 ohms DC resistance; 1700v RMS test voltage; hermetically sealed steel case; o/a dimen approx 3-13/32 in. diam, 4-1/8 in. lg; four 0.201 in. diam mtg holes on 2-11/16 in. by 2-11/16 in. mtg/c on 3-13/32 in. sq mtg flange; two solder lug type term on insulators 1/2 in. lg, 7/16 in. diam o/a, located on mtg surface; CUT part/dwg no. F-3576; CBTL part/dwg NL-980680-1 | Filter -220v Power Supply |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------|---|--|--------------------------------------|
| L-3003 | N16-R-29871-6781 | REACTOR: swinging choke; dual section; section 1 two hy at 0.230 amp DC, section 2 two hy min o/a inductance, 0.023 amp min DC, section 2 10 hy max o/a inductance, 0.230 amp max o/a DC; section 1 35 ohms DC resistance, section 2 60 ohms DC resistance; 1850v RMS test voltage; hermetically sealed steel case; o/a dimen 3-1/4 in. lg by 2-1/2 in. wd by 5-11/32 in. h; four no. 8-32 thd mtg stud 15/32 in. lg mtd on 2-1/4 in. by 1-15/16 in. mtg/c; three solder lug type term, located on mtg standoffs 7/16 in. diam; CUT part/dwg no. F-3572; CBTL part/dwg NL-980679-1 | Filter 250v Power Supply |
| O-3001 | Procured on demand by nearest Naval Shore Supply Activity | RETAINER, bearing: upper; c/o rectangular, corrosion resisting steel, electropolish finish ball spacer w/twelve 0.125 in. diam stainless steel balls, self-retained; 11.344 in. lg, 1/4 in. wd, 0.125 in. thk o/a dimen; CCCS dwg A-9019.9-1 (Revision no. 3), p/o H-3001; same as O-506 | p/o Chassis Slide |
| O-3001.1 | | Same as O-3001; p/o H-3002 | p/o Chassis Slide |
| O-3002 | Procured on demand by nearest Naval Shore Supply Activity | RETAINER, bearing: lower; c/o rectangular, corrosion resisting steel, electropolish finish ball spacer w/twelve 0.125 in. diam stainless steel balls, self-retained; 10.844 in. lg, 1/4 in. wd, 0.125 in. thk o/a dimen; CCCS dwg A-9019.9-2 (Revision no. 3); p/o H-3001; same as O-508 | p/o Chassis Slide |
| O-3002.1 | | Same as O-3002; p/o H-3002 | p/o Chassis Slide |
| O-3003 | Low Failure Item | SPRING: helical compression type; 0.032 in. diam music wire per NAVY spec 22W11C; 3/8 in. h, 1/2 in. diam o/a; 3-1/2 turns, RH or LH wound; first and last 3/4 turns are flat; cad pl; CBTL part/dwg NL-900018-1; u/w H-3001; same as O-507 | Stop Button Spring for Chassis Slide |
| O-3003.1 | | Same as O-3003; u/w H-3002 | Stop Button Spring for Chassis Slide |
| O-3004 | Low Failure Item | SPRING: loop type; for latch; 0.038 in. diam corrosion resisting steel spring wire; 2-1/2 in. lg, 11/16 in. h o/a; one end semi-hook type, one end open; irregular shape; CBTL part/dwg NL-900991-1; p/o H-3001; same as O-509 | For Latch in Chassis Slide |
| O-3004.1 | | Same as O-3004, p/o H-3002 | For Latch in Chassis Slide |
| O-3005 | Low Failure Item | SPRING: flat type; beryllium copper alloy no. 25 cond 1/4 H, 0.025 in. thk strip per MIL-C-947, silver pl; one no. 3-48 thd mtg hole on term; 1-3/8 in. lg, 15/16 in. h; CBTL part/dwg NL-900142-1; p/o S-3006; same as O-510 | For Contact in S-3006 |
| R-3001 thru R-3006 | | Not Used | |
| R-3007 | N16-R-61476-2975 | RESISTOR, FIXED, WIRE WOUND: 90 ohms, $\pm 5\%$; 40 w; per spec JAN-R-26A; JAN type RW14F900 | Bleeder -24v Supply |
| R-3008 | N16-R-62072-1995 | RESISTOR, FIXED, WIRE WOUND: 10,000 ohms, $\pm 5\%$; 40 w; per spec JAN-R-26A; JAN type RW14F103 | Bleeder 250v Supply |
| R-3009 | | Same as R-3008 | Bleeder 300v Supply |
| R-3010 | N16-R-50130-469 | RESISTOR, FIXED, COMPOSITION: 4,700 ohms, $\pm 10\%$; 2 w; per spec JAN-R-11; JAN type RC42BF472K | Bleeder -220v Supply |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------|---|--|------------------------------|
| R-3011 | | Same as R-3010 | Bleeder -220v Supply |
| R-3012 | | Same as R-3010 | Bleeder -220v Supply |
| R-3013 | | Same as R-3010 | Bleeder -220v Supply |
| R-3014 thru R-3018 | | Not Used | |
| R-3019 | N16-R-50741-811 | RESISTOR, FIXED, COMPOSITION: 270,000 ohms, ±10%; 1/2 w; per spec JAN-R-11; JAN type RC20BF274K; same as R-1095 | Dropping Resistor I-3004 |
| R-3020 | N16-R-50786-811 | RESISTOR, FIXED, COMPOSITION: 390,000 ohms, ±10%; 1/2 w; per spec JAN-R-11; JAN type RC20BF394K; same as R-1011 | Dropping Resistor I-3005 |
| R-3021 thru R-3023 | | Not Used | |
| R-3024 | For Replacement Use N16-R-65818-6746 | RESISTOR, FIXED, WIRE WOUND: 350 ohms, ±5%; 22 w; per spec JAN-R-26A; JAN type RW21G351 | Relay Holding Resistor |
| R-3025 | For Replacement Use N16-R-65735-1016 | RESISTOR, FIXED, WIRE WOUND: 160 ohms, ±5%; 22 w; per spec JAN-R-26A; JAN type RW29G161; p/o K-3003 | Dropping Resistor K-3003 |
| R-3026 | | Same as R-3025; p/o K-3003 | Dropping Resistor K-3003 |
| S-3001 | N17-S-72831-1101 | SWITCH, TOGGLE: DPST; 55 amps; phenolic body; 2-1/4 in. lg max, 2-5/32 in. h, 1-33/64 in. wd max o/a dimen; bat type actuating type handle, 7/8 in. lg; locking action; four screw type term, located on back; 3 hole mtg, 2 holes for no. 6-32 screw, one hole for actuating handle, 1/2 in. diam, flush mtg; per spec JAN-S-23; JAN type ST55K | Emergency "On-Off" Switch |
| S-3002 | N17-S-72828-2596 | SWITCH, TOGGLE: DPST; 30 amp; phenolic body; 2-7/32 in. lg max, 1-21/64 in. h, 49/64 in. wd max o/a dimen; bat type actuating handle, 11/16 in. lg excluding 15/32 in. lg bushing; locking action; four screw type term, located on back; 1 hole mtg for 15/32 in. -32 thd bushing; per spec JAN-S-23; JAN type ST50K | Space Heater "On-Off" Switch |
| S-3003 | | Not Used | |
| S-3004 | N17-S-58883-3104 | SWITCH, PUSH: contact arrangement 2 units, SPST (buttons mechanically interlocked); DC, 550v, not rated for nominal load, not rated for resistive load, 10 amp for inductive load; momentary action, normally open; metal body; 3-23/32 in. lg, 1-3/4 in. wd, 1-21/32 in. h; push button type, 13/32 in. max lg, 9/32 in. lg min from surface; 4 screw type term; mts by 2 elongated holes 3/16 in. lg by 5/32 in. wd on 3-9/32 in. mtg/c; black button marked "start" at top, red button marked "stop" at bottom; CAE cat no. 10250-H2544, dwg no. A-86-305, rev C; CBTL part/dwg NL-983355-1 | "Stop-Start" Switch |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--|
| S-3005 | N17-S-70412-4406 | SWITCH, TOGGLE: SPST; 40 amps; phenolic body; 2-7/32 in. lg, 1-9/64 in. h, 41/64 in. wd max o/a dimen; bat type actuating handle, 11/16 in. lg excluding 15/32 in. bushing; locking action; 2 solder lug type term, located on back; 1 hole mtg for 15/32 in. -32 thd bushing; per spec JAN-S-23; JAN type ST42A | "Standby" Switch |
| S-3006 | N17-S-99999-0626 | SWITCH, INTERLOCK: push with snap action cheater; 2 piece door type; DPST, male and female type, beryllium copper alloy strip contact; thermosetting plastic molding body; 1-1/2 in. lg by 1-1/2 in. wd by 1/2 in. thk o/a dimen excluding term posts and push rod; 2 screw type term located on both ends of switch; mtd by means of two 0.128 in. diam countersunk holes spaced 0.875 in. apart; interrupts 24v DC; CBTL part/dwg NL-900059-2; same as S-501 | Interlock Switch |
| S-3007 | N17-S-73082-9028 | SWITCH, TOGGLE: DPST; 6 amps; phenolic body; 2-1/8 in. lg, 1-9/32 in. h, 23/32 in. wd max o/a dimen; bat type actuating handle, 11/16 in. lg excluding 15/32 in. lg bushing; locking action; 6 solder lug type term, mtd on back; single hole mtg, 15/32 in. -32 thd bushing; per spec JAN-S-23; JAN type ST22K | Interlock Battle Short |
| T-3001 | N17-T-73831-2066 | TRANSFORMER, POWER, STEP-DOWN AND STEP-UP: hermetically sealed metal case; 110v AC, 50/60 cyc, single ph input; 6 output windings, no. 1 secondary 64.0v at 3 amp tapped to give 48v between taps, no. 2 secondary 5v at 2 amp, no. 3 secondary 5v at 2 amp, no. 4 secondary 5v at 2 amp, no. 5 secondary 840v at 0.230 amp tapped to give 740v between taps, no. 6 secondary 590v at 0.125 amp center tapped; no. 5 secondary 2700v RMS test voltage others 1500v RMS; wax impregnated, pitch filled; 7 in. lg, 6 in. wd, 5-3/8 in. h per MBCA Ref Dwg Group 12; 21 solder lug type term on insulator bushing 13/16 in. h; four 1/4 in. -20 thd studs on 5-1/4 in. by 5-3/16 in. mtg/c; electrostatic shield; special features, no. 1 secondary 50% duty cyc; CAVM part/dwg S-2566-1; CBTL part/dwg NL-982565-1 | Power for -24v, -220v, 250v, 300v Supplies |
| V-3001 | N16-T-55446-5 | ELECTRON TUBE: dual diode; per spec MIL-E-1B; JAN type 5R4WGB; same as V-1009 | Rectifier +250v Power Supply |
| V-3002 | | Same as V-3001 | Rectifier +300v Power Supply |
| V-3003 | | Same as V-3001 | Rectifier -220v Power Supply |
| XC-3001 | N16-S-63515-4151 | SOCKET, ELECTRON TUBE: 8 contacts, brass, silver pl; octal type; oval; 1-7/8 in. lg, 1-3/8 in. wd, 11/16 in. h excluding term; phenolic dielectric insulator; one piece saddle mtg, bottom mtg; 1-1/8 in. diam chassis hole required, 2 mtg holes, 0.156 in. diam, 1.500 in. c to c; per spec JAN-S-28A; JAN type TS101PO1; same as XC-1034 | u/w C-3001 |
| XC-3002 | | Same as XC-3001 | u/w C-3002 |
| XC-3003 | | Not Used | |
| XC-3004 | | Same as XC-3001 | u/w C-3004 |
| XC-3005 | | Same as XC-3001 | u/w C-3005 |
| XC-3006 | | Same as XC-3001 | u/w C-3006 |
| XC-3007 | | Same as XC-3001 | u/w C-3007 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|---------------------|
| XC-3008 | | Same as XC-3001 | u/w C-3008 |
| XC-3009 | | Not Used | |
| XC-3010 | | Same as XC-3001 | u/w C-3010 |
| XF-3001 | Low Failure Item | FUSEHOLDER: extractor post type; 250v, 30 amp; accommodates 1 fuse, cartridge type, 1-1/2 in. lg, 13/32 in. diam; black bakelite body; bright alloy pl brass contacts; 2-1/4 in. lg, 1.775 in. wd, 1.2 in. h o/a dimen; 2 solder lug type term, hot tin dipped; two 0.167 in. mtg holes 1.312 in. c to c for fastening to panel; one mtg hole 0.865 in. diam; waterproof; CFA type HPC-DZ; CBTL part/dwg NL-900068-2; same as XF-501 | For F-3001 |
| XF-3002 | | Same as XF-3001 | For F-3002 |
| XF-3003 | | Same as XF-3001 | For F-3003 |
| XF-3004 | | Same as XF-3001 | For F-3004 |
| XF-3005 | | Same as XF-3001 | For F-3005 |
| XF-3006 | | Same as XF-3001 | For F-3006 |
| XF-3007 | | Same as XF-3001 | For F-3007 |
| XF-3008 | | Same as XF-3001 | For F-3008 |
| XF-3009 | | Same as XF-3001 | For F-3009 |
| XF-3010 | | Same as XF-3001 | For F-3010 |
| XI-3001 | N17-L-99999-0129 | LIGHT, INDICATOR: supplied w/lens, 1 in. diam, red convex; screw type lens holder; accommodates S6 DC bulb w/bayonet base of double contact type; 125v DC, 0.6 amp, 75 w; brass, black nickel shell, enclosed; 3 in. lg, 1-1/8 in. diam o/a dimen; 1 mtg hole required 1 in. diam; accommodates 21/32 in. thk panel; horizontally mtd; lamp replaceable from front of panel; 2 solder lug type term, located on socket base, both insulated from shell; CAYZ type 51202-111; same as XI-501 | Retainer for I-3001 |
| XI-3002 | N17-L-50812-3395 | LAMPHOLDER: single holder; accommodates 952 base, MBCA Ref Dwg Group 7; 28v, 0.035 amp; brass shell; 0.865 in. lg, 1/2 in. across flats of hexagonal top, 19/32 in. wd approx; 1 solder lug type term; mtd by 7/16 in. -28 NEF thd; body cad pl; CBTL part/dwg NL-981474-2; same as XI-401 | Retainer for I-3002 |
| XI-3003 | N17-L-76763-1597 | LIGHT, INDICATOR: supplied w/lens, 5/8 in. diam clear, fluted, screw type holder; accommodates neon T3-1/4, NE51 lamp, single contact miniature bayonet base, 110v; brass shell, black nickel finish, enclosed; 2-5/16 in. lg, 15/16 in. diam o/a dimen; 1 mtg hole required 11/16 in. diam, accommodates up to 1/4 in. thk panel; horizontally mtd; lamp replaceable from front of panel; 2 solder lug type term, located on socket base, both insulated from shell; incl built in 51,000 ohm 1/3 w composition resistor; CAYZ type 53408-XP18-997; same as XI-503 | Retainer for I-3003 |
| XI-3004 | | Same as XI-3003 | Retainer for I-3004 |
| XI-3005 | | Same as XI-3003 | Retainer for I-3005 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|---------------------|
| XI-3006 | | Same as XI-3003 | Retainer for I-3006 |
| XI-3007 | N17-L-76682-1298 | LIGHT, INDICATOR: w/lens, 5/8 in. diam, amber, fluted, screw type holder, accommodates neon T3-1/4, NE 51 lamp, single contact miniature bayonet base; 125v, 75 w; brass shell, black nickel finish, enclosed; 2-7/32 in. lg, 15/16 in. diam; accommodates up to 9/32 in. thk panel; horizontally mtd; lamp replaceable from front of panel; 2 solder lug type term, located on socket base, both insulated from shell; w/built in 51,000 ohm 1/3 w comp resistor; CAYZ type 53408-XP18-993 | Retainer for I-3007 |
| XV-3001 | | Same as XC-3001 | u/w V-3001 |
| XV-3002 | | Same as XC-3001 | u/w V-3002 |
| XV-3003 | | Same as XC-3001 | u/w V-3003 |
| 3201-3299 | F16-C-92096-1008 | TRANSMITTER COUPLER, CU-402/SRT (COUPLER, DETECTOR, R. F.): auto-transformer type, RF, impedance matching, tapped; standing wave indicator c/o current transformer and sensing network excluding indicating meter; no operating power requirements; aluminum case; grey enamel finish; o/a dimen 8-3/4 in. h, 7-11/16 in. wd, 10-1/16 in. d; four 0.290 in. diam mtg holes on 5 in. by 8-11/16 in. mtg/c; special features c/o 2 rotary switches incl to select input and output taps of autotransformer, RF ammeter provided to measure RF line current, shock mtd on mtg bracket; w/o spares; p/o AN/SRT-14, 15, 16; CBTL part/dwg NL-901100-14 | |
| A-3201 | N17-M-75107-3901 | MOUNT, RESILIENT: irregular shape; 10 lbs max allowable load; 1-3/4 in. lg, 1-1/4 in. wd, 13/16 in. thk o/a; rubber form cushion approx 1 in. diam by 5/8 in. thk; steel center sleeve w/no. 8-32 thd, 1/2 in. d bolt hole; two 0.141 in. diam mtg holes 180° apart, spaced 1-13/32 in. c to c; CAYU type no. 6550-2.5T | Shock Mount |
| A-3202 | | Same as A-3201 | Shock Mount |
| A-3203 | | Same as A-3201 | Shock Mount |
| A-3204 | | Same as A-3201 | Shock Mount |
| C-3201 | N16-C-99999-1169 | CAPACITOR, FIXED, PAPER DIELECTRIC: 1 section; Ref Dwg Group 1 style 25-K; 0.15 mf ±20% tolerance; 100v DCW; -55° C to +125° C ambient temp range; hermetically sealed metal case; 13/16 in. lg, 0.400 in. diam o/a dimen excluding term; 2 wire type term, located in center of each end; vitamin "Q" impregnated; internally grounded; w/inserted tab; CSF type 86P15401; p/o Z-3201 | By-Pass |
| C-3202 | | Same as C-3201; p/o Z-3201 | By-Pass |
| C-3203 | | Same as C-3201; p/o Z-3201 | By-Pass |
| C-3204 | | Same as C-3201; p/o Z-3201 | By-Pass |
| CR-3201 | N16-T-67040 | CRYSTAL UNIT, RECTIFYING: germanium type; 0.035 amp maximum continuous forward current @ 25° C; 0.100 amp maximum peak forward current @ 25° C; 100v peak inverse voltage @ 25° C; 1 mmf shunt capacitance; 0.400 in. lg, 0.175 in. diam, excluding term; 2 wire pigtail type term, located axially at each end; transient surge current for 1 second, 0.5 amp at 25° C; CRP type CK708; p/o Z-3201 | Diode |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--|
| CR-3202 | | Same as CR-3201; p/o Z-3201 | Diode |
| E-3201 | N16-K-700346-101 | KNOB: round; black thermosetting phenolic, dull matt finish; designed to accommodate 1/4 in. diam shaft, 9/16 in. d shaft hole; two no. 8-32 thd by 1/4 in. lg hex set screws, cad pl, spaced 120° apart; brass, nickel pl insert; w/pointer; 1-1/2 in. diam by 7/8 in. wd b/a; fluted; CMI part no. RE10F479C, type B (dull matt finish) | Input Tap |
| E-3202 | | Same as E-3201 | Output Tap |
| J-3201 | N17-C-73108-5906 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female, round; straight type; 1 in. sq by 1.082 in. lg approx o/a dimen; RF cable connector, 50 ohms nominal impedance, non-constant frequency impedance characteristic; cylindrical body w/sq mtg flange, silver pl; 5/8 in. -24 thd one end only; teflon insulator insert; 0.332 in. diam max cable opening; 4 mtg holes 1/8 in. diam spaced 23/64 in. c to c; weatherproof construction w/sealing gasket; per spec JAN-C-71A; JAN type UG-58A/U | RF Input from Transmitter |
| J-3202 | | Same as J-3201 | RF Output to Antenna |
| J-3203 | N17-C-72240-1522 | CONNECTOR, RECEPTACLE, ELECTRICAL: 3 size 16 contacts, female, round; polarized; 1-3/16 in. sq by 1-3/32 in. lg excluding contacts o/a dimen; contacts rated at 20 amp, 200v DC, 150v AC RMS; box mtg receptacle, straight type, cylindrical w/sq mtg flange; aluminum alloy, tin pl; molded thermosetting plastic insert; 7/8 in. -20 coupling thd; 4 mtg holes 0.120 in. diam spaced 29/32 in. c to c; panel mtg, pressure tight fitting; per spec MIL-C-5015; MIL type AN-3102A-14S-7S | S.W.R. Output to Control Indicate Unit |
| M-3201 | N17-M-18250-8256 | AMMETER: RF thermoammeter type; panel mtd; RF amperes; 0 to 5 CW; graduated in increments of tenths; linear expanding scale; round, plastic; flush mtd; flange 3-1/2 in. wd; 2% accuracy full scale to 65 mc; calibrated for non-magnetic panel; internal thermocouple; black numerals on white background; per spec JAN-I-6; JAN type MR35W005RLAA; same as M-3102 | Antenna Current |
| R-3201 | Assemble from Component parts | RESISTOR ASSEMBLY: 16 resistors mtd on fiberglass board, 1-5/8 in. lg, 1-1/4 in. wd, 1/16 in. thk o/a; 8 resistors, fixed composition type, 1000 ohms resistance, ±5% tolerance, 1/2 w power dissipation, per spec JAN-R-11; JAN type RC20BF102J; 8 resistors fixed composition type, 510 ohms resistance, ±5% tolerance, 1/2 w power dissipation, per spec JAN-R-11; JAN type RC20BF511J; connected as follows, eight 510 ohm resistors in series, connected in series with eight 1000 ohm resistors in parallel; total resistance 6080 ohms, 8 w total power dissipation; CBTL part/dwg NL-961074-1; p/o Z-3201 | RF Voltage Divider |
| R-3202 | N16-R-49237-995 | RESISTOR, FIXED, COMPOSITION: 10 ohms, ±5%; 2 w; per spec JAN-R-11; JAN type RC42GF100J; p/o Z-3201 | Damping T-3202 |
| R-3203 | | Same as R-3202; p/o Z-3201 | Damping T-3202 |
| R-3204 | | Same as R-3203; p/o Z-3201 | Damping T-3202 |
| R-3205 | | Same as R-3202; p/o Z-3201 | Damping T-3202 |
| R-3206 | N16-R-49768-438 | RESISTOR, FIXED, COMPOSITION: 470 ohms, ±5%; 1/2 w; per spec JAN-R-11; JAN type RC20GF471J; p/o Z-3201 | RF Voltage Divider |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|---|
| R-3207 | | Same as R-3206; p/o Z-3201 | RF Voltage Divider |
| R-3208 | | Same as R-3206; p/o Z-3201 | DC Voltage Divider |
| R-3209 | | Same as R-3206; p/o Z-3201 | DC Voltage Divider |
| S-3201 | N17-S-99999-0594 | SWITCH, ROTARY: one section; 17 positions max number of switching positions possible, adjustable stop incl, 20° positioning increments; non-pile-up, one moving contact, 5 fixed contact, (Looking at rear of switch with mtg holes in vertical position and contacts at upper half the first contact CW is located at approx 310°), 6 dummy term, single pole, 4 throws; AC, 115v max rated voltage, 7-1/2 amp max nominal current; solid silver alloy contact; L-5 steatite section insulation; not inclosed; 2-1/16 in. lg, 1-7/8 in. wd, 2-13/16 in. h; mtd by two no. 6-32 NC-2 tapped standoffs, 2-7/16 in. c to c; solder lug term; non-shorting type; CBN part JV-9001 modified; CBTL part/dwg NL-901124-2 | Input Tap Changing |
| S-3202 | N17-S-060651-8653 | SWITCH, ROTARY: one section; 17 positions max number of switching positions possible, adjustable stop incl, 20° positioning increments; non-pile-up, one moving contact, 5 fixed contact, (Looking at rear of switch with mtg holes in vertical position and contacts at upper half the first contact CW is located at approx 10°) 6 dummy term, single pole, 4 throw; AC, 115v max rated voltage, 7-1/2 amp max nominal current; solid silver alloy contact; L-5 steatite section insulation; not inclosed; 2-1/16 in. lg, 1-7/8 in. wd, 2-13/16 in. h; mtd by two no. 6-32 NC-2 tapped standoffs, 2-7/16 in. c to c; solder lug term; non-shorting type; CBN part JV-9001 modified; CBTL part/dwg NL-901590-2 | Output Tap Changing |
| T-3201 | N17-T-81892-7318 | TRANSFORMER, RADIO FREQUENCY: impedance; single winding, multi-layer wound; at 1 mc impedance from tap G-1 is max 370+j100 ohms min. from tap 1-2 is max 170+j45 ohms min, from tap 2-3 is max 42 + j10 ohms min, from tap 3-4 is max 42 + j10 ohms min; 7 turns of .021 in. silver pl copper sheet insulated by electrical tape; 4 taps, no. 1 tapped at 3 turns, no. 2 tapped at 5 turns, no. 3 tapped at 6 turns, no. 4 tapped at 7 turns; 3-3/8 in. h, 3 in. wd, 1-13/16 in. thk o/a less tap leads; toroidal cores wound of 0.001 in. thk Allegheny Mumetal hydrogen annealed after winding; CBTL part/dwg NL-901601-14 | Impedance Matching |
| T-3202 | N17-T-99999-0428 | TRANSFORMER, RADIO FREQUENCY: single winding, single layer close toroidal wound; total impedance at 1.0 mc is 330 + j240 ohms; at 3.0 mc is 800 + j330 ohms; 10 turns no. 24 AWG triple coated formex wire; insulated by 1/4 in. wd fiberglass tape; winding center tapped to grounding strap; grounding strap composed of 0.010 in. thk soft copper per FED. spec QQ-C-105a; enclosed in case; shielded; 1-3/16 in. diam, 2-1/16 in. wd excluding term; core wound of 0.001 in. thk Allegheny Mumetal hydrogen annealed; mts by one no. 6-32 in. by 1-1/4 in. screw; four stud type term, located on each side and bottom; CBTL part/dwg NL-961094-2; p/o Z-3201 | Sensing Circuit Current Trans- former |
| Z-3201 | N16-C-92096-1009 | COUPLER-DETECTOR, RADIO FREQUENCY: transmission line standing wave ratio detector and monitor; 0.3 mc to 26 mc frequency range; crystal type rectifiers, CRP type no. CK-708; crystals mtd by wire leads; rectangular case, brass, cad pl; o/a dimen 3-15/32 in. lg, 2-27/64 in. wd, 3 in. h; CBTL part/dwg NL-961080-14 | SWR Monitor |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|-------------------|
| 3301-3399 | N16-M-384502-0436 | * INSTALLATION KIT, MK-230/SRT-14: provides material to install Radio Transmitting Set AN/SRT-14; consists of shockmounts, interstack cable harness, connectors and accessories, cable assembly, main test cable accessories, mtg hardware, nameplate, and instruction book; CBTL part/dwg NL-983336-1-1 | |
| 3301-3399 | N16-M-384502-0437 | * INSTALLATION KIT, MK-231/SRT-14A; provides material to install Radio Transmitting Set AN/SRT-14A; consists of shockmounts, interstack cable harness, connectors and accessories, cable assembly, main test cable accessories, mtg hardware, nameplate, and instruction book; CBTL part/dwg NL-983336-1-4 | |
| A-3301 | N17-M-99999-129 | MOUNT, RESILIENT: sq mtg; 250 to 350 lb load rating; 5-1/4 in. sq by 2-1/2 in. h; natural rubber cushion material, 5/32 in. thk mtg form; center sleeve mild steel, 5/8 in. -11 tapped center hole, 7/8 in. d; holder mild steel; four 15/32 in. diam mtg holes spaced 4-1/4 in. c to c 90° apart; CAYU type C-4300-T10; CBTL part/dwg NL-983345-1-3 | Shock Mount |
| A-3302 | | Not Used | |
| A-3303 | | Same as A-3301 | Shock Mount |
| A-3304 | | Same as A-3301 | Shock Mount |
| A-3305 | | Same as A-3301 | Shock Mount |
| H-3301 | Procured on demand by nearest Naval Shore Supply Activity | CLAMP, ELECTRICAL: aluminum; anodized grey; 0.828 in. ID open for friction mtg to cable; 4.105 in. lg, 1.510 in. diam; mts to connector by 1.3750 in. -18 NEF-2 internal thd; designed to hold cable 0.680 in. diam min to 0.820 in. diam max; eyelet for chain provided, wrench flats; CBET part 10-35952-244 | Cable Clamp |
| H-3302 | | Same as H-3301 | Cable Clamp |
| H-3303 | | Same as H-3301 | Cable Clamp |
| H-3304 | Procured on demand by nearest Naval Shore Supply Activity | CLAMP, ELECTRICAL: aluminum; anodized grey, 1.490 in. ID open for friction mtg to cable; 4.230 in. lg, 2.010 in. diam; mts to connector by 1.8750 in. -16 N-2 internal thd; designed to hold cable 1.310 in. diam min to 1.490 in. diam max; eyelet for chain provided, wrench flats; CBET part 10-35952-321 | Cable Clamp |
| H-3305 | | Same as H-3304 | Cable Clamp |
| H-3306 | | Same as H-3304 | Cable Clamp |
| H-3307 | Shop Manufacture | COVER, ELECTRICAL EQUIPMENT: metallic, corrosion resistant; 1.209 in. lg less chain, 1.750 in. wd across wrench flats, chain approx 5.500 in. lg; internal thread 2 in. -18 NEF-2, has internal key; CBET part 10-35963-32 | Connector Cover |
| H-3308 | | Same as H-3307 | Connector Cover |
| H-3309 | | Same as H-3307 | Connector Cover |
| H-3310 | Shop Manufacture | COVER, ELECTRICAL EQUIPMENT: metallic, corrosion resistant; 1.209 in. lg less chain, 1.250 in. wd across wrench flats, chain approx 5.000 lg; external thread 1-1/2 in. -18 NEF-2, has internal key; CBET part 10-35963-24 | Connector Cover |

* These kits are the same in every respect except for the nameplates and covers.

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|-------------------------------|---|--|--------------------------|
| H-3311 | | Same as H-3310 | Connector Cover |
| H-3312 | | Same as H-3310 | Connector Cover |
| H-3313 | Low Failure Item | BOLT, eye: forged steel, zinc pl; 1/2 in. -13 machine thd; 3-1/8 in. lg o/a; 3/4 in. lg thd portion; shoulder, 1 in. diam by 3/16 in. thk; 1-3/16 in. ID of eye; less nuts; CBTL part/dwg NL-983347-1 | For Installation |
| H-3313.1 thru H-3313.3 | | Same as H-3313 | For Installation |
| H-3314 | Low Failure Item | INSERT, leveling: corrosion resisting steel, passivate; 5/8 in. -18 NF-2 external thd, 9/32 in. wd, 0.316 in. ID; CBTL part/dwg NL-982598-1 | For Leveling Cabinets |
| H-3314.1 thru H-3314.9 | | Same as H-3314 | For Leveling Cabinets |
| H-3315 | Procured on demand by nearest Naval Shore Supply Activity | BUTTON, plug: brass, cad pl; for 7/16 in. diam hole; 3/4 in. diam, 5/16 in. h o/a; CUF part 51117 | Cabinet Plug |
| H-3315.1 thru H-3315.11 | | Same as H-3315 | |
| H-3316 | N17-C-781366-251 | CLAMP, ELECTRICAL: aluminum alloy; tin pl; saddle clamp fastening device w/2 filister hd machine screws; o/a dimen 29/32 in. lg by 1.047 in. OD; no mtg facilities; designed to hold material 7/16 in. diam max; 3/4 in. -20 NEF coupling thd; rubber bushing & fibre washer incl; per spec ML-C-5015; MIL type AN-3057-6; p/o W-3301 | Cable Clamp |
| H-3317 | Low Failure Item | INSERT, leveling: corrosion resisting steel, passivate; 9/16 in. -18 NF-2 external thd, 9/32 in. wd, 0.316 in. ID; CBTL part/dwg NL-901561-1 | For Leveling Cabinets |
| H-3317.1 | | Same as H-3317 | For Leveling Cabinets |
| H-3318 | Procured on demand by nearest Naval Shore Supply Activity | BUTTON, plug: brass, cad pl; for 5/16 in. diam hole; 7/16 in. diam, 7/32 in. h o/a; CUF part 48199 | Cabinet Plug |
| H-3318.1 thru H-3318.11 | | Same as H-3318 | Cabinet Plug |
| P-3301 | N17-C-71339-4961 | CONNECTOR, PLUG, ELECTRICAL: 30 contacts; 6 size 12 contacts, 24 size 16 contacts; one mating end; female, 41 and 22 amp current rating, 700v DCW, 500v RMS; synthetic rubber; straight shape; 1.890 in. lg, 2.251 in. diam o/a; w/enclosing shell, aluminum base alloy, resistant to corrosion; polarized; locking type, 2 in. -18 NEF-2 thd coupling nut; 2.047 in. diam max cable accommodated; watertight; resistant to shock and vibration; CBET part 10-64632-8S | Mates w/J-3502 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|-------------------|
| P-3302 | N17-C-71330-8888 | CONNECTOR, PLUG, ELECTRICAL: 24 contacts; size 16 m; one mating end; female, 22 amp current rating; 700v DCW, 500v RMS; synthetic rubber; straight shape; 1.827 in. lg, 1.742 in. diam o/a; w/enclosing shell, aluminum base alloy, resistant to corrosion; polarized; locking type, 1-1/2 in. -18 NEF-2 thd coupling nut; 1.547 in. diam max cable accommodated; watertight; resistant to shock and vibration; CBET part 10-64624-28S | Mates w/J-3504 |
| P-3303 | N17-C-71628-3701 | CONNECTOR, PLUG, ELECTRICAL: 24 contacts, size 16 m; one mating end; male, 22 amp current rating, 700v DCW, 500v RMS; synthetic rubber; straight shape; 1.827 in. lg, 1.742 in. diam o/a; w/enclosing shell, aluminum base alloy; resistant to corrosion; polarized; locking type, 1-1/2 in. -18 NEF-2 thd coupling nut; 1.547 in. diam max cable accommodated; watertight; resistant to shock and vibration; CBET part 10-64624-28P | Mates w/J-3503 |
| P-3304 | N17-C-71643-3555 | CONNECTOR, PLUG, ELECTRICAL: 30 contacts, 6 size 12 contacts; 24 size 16 contacts; one mating end; male, 41 and 22 amp current rating, 700v DCW, 500v RMS; synthetic rubber; straight shape; 1.890 in. lg, 2.251 in. diam o/a; w/enclosing shell, aluminum base alloy, resistant to corrosion; polarized; locking type, 2 in. -18 NEF-2 thd coupling nut; 2.047 in. diam max cable accommodated; watertight; resistant to shock and vibration; CBET part 10-64632-8P | Mates w/J-3501 |
| P-3305 | | Same as P-3302 | Mates w/J-302 |
| P-3306 | | Same as P-3301 | Mates w/J-301 |
| P-3307 | N17-C-71422-3137 | CONNECTOR, PLUG, ELECTRICAL: 1 contact, one mating end; male, insulation and center contact provided by dielectric and center conductor of cable; straight shape; 3 in. lg, 1-1/2 in. diam o/a; w/enclosing shell, copper base alloy, resistant to corrosion, precious metal pl; polarized; locking type, 1-1/4 in. -18 internal thd coupling nut; environment resistant; per MIL-C-3650; MIL type UG-154/U | Mates w/J-3506 |
| P-3308 | N17-C-71419-4088 | CONNECTOR, PLUG, ELECTRICAL: 1 contact; one mating end; male, 50 ohm impedance; low loss plastic; straight shape; 2-3/8 in. lg, 1-5/16 in. diam o/a; w/enclosing shell, copper base alloy, resistant to corrosion, precious metal pl; polarized; locking type, 5/8 in. -24 thd coupling nut; environment resistant; per MIL-C-71A; MIL type UG-167A/U | Mates w/J-3202 |
| P-3309 | | Same as P-3307 | Mates w/J-3505 |
| P-3310 | | Same as P-3307 | Mates w/J-303 |
| P-3311 | Low Failure Item | ADAPTER: brass, cad pl; 3/4 in. OD, 1-3/4 in. lg, 0.357 in. ID one end, 0.193 in. ID other end; four no. 6-32 NC-2 tapped holes thru one wall; CBTL part/dwg A2011254 | Mates w/J-3502 |
| P-3312 | | Same as P-3311 | Mates w/W-301 |
| P-3313 | For Replacement Use N17-C-71117-2439 | CONNECTOR, PLUG, ELECTRICAL: one contact; one mating end; female, 50 ohms impedance; low loss plastic; straight shape; 1-15/16 in. lg, 11/16 in. diam o/a; w/enclosing shell, copper base alloy, resistant to corrosion, precious metal pl; polarized; locking type, 5/8 in. -24 thd coupling nut; environment resistant; per MIL-C-71A; MIL type UG-23B/U | Mates w/P-610 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--|
| P-3314 | For Replacement Use N17-C-71417-9699 | CONNECTOR, PLUG, ELECTRICAL: one contact; one mating end; male, 50 ohm impedance; low loss plastic; straight shape; 1-7/8 in. lg, 13/16 in. diam o/a; w/enclosing shell, copper base alloy, resistant to corrosion, precious metal pl; polarized; locking type, 5/8 in. -24 thd coupling nut; environment resistant; per MIL-C-71A; MIL type UG-21B/U; same as P-301 | Mates w/J-3201 |
| P-3315 | For Replacement Use N17-C-70588-1524 | CONNECTOR, PLUG, ELECTRICAL: 3 size 16 contacts, male, round; polarized; straight type; 1-1/8 in. OD by 2-1/16 in. lg o/a dimen; contacts rated at 20 amps, 200v DC, 150v AC (RMS); cylindrical, aluminum alloy, tin pl, split shell; molded thermosetting plastic insert; 3/4 in. -20 conduit thd; 1-1/8 in. OD of coupling nut, 7/8 in. -20 coupling thd; per spec MIL-C-5015; MIL type AN-3106B-14S-7P; p/o W-3301 | Mates w/J-3203 |
| W-3301 | Assemble from Component Parts | CABLE ASSEMBLY: special purpose; MIL type CO-02LGF (2/18)SJ 0350 per MIL-C-3432; 14 ft lg; one end terminated incl P-3315 and H-3316; CBTL part/dwg NL-901214-2 | Interconnecting Cable Assembly |
| 3301-3399 | N16-M-384502-0438 | * INSTALLATION KIT, MK-232/SRT-15: provides material to install Radio Transmitting Set AN/SRT-15; consists of shockmounts, interstack cable harnesses, connectors and accessories, cable assembly, main test cable accessories, mtg hardware, nameplate, instruction book and Cover CW-341/SRT; CBTL part/dwg NL-983336-1-2 | |
| 3301-3399 | N16-M-384502-0439 | * INSTALLATION KIT, MK-233/SRT-15A: provides material to install Radio Transmitting Set AN/SRT-15A; consists of shockmounts, interstack cable harnesses, connectors and accessories, cable assembly, main test cable accessories, mtg hardware, nameplate, instruction book and Cover CW-341A/SRT; CBTL part/dwg NL-983336-1-5 | |
| A-3301 | N17-M-99999-129 | MOUNT, RESILIENT: sq mtg; 250 to 350 lb load rating; 5-1/4 in. sq by 2-1/2 in. h; natural rubber cushion material, 5/32 in. thk mtg form; center sleeve mild steel, 5/8 in. -11 tapped center hole, 7/8 in. d; holder mild steel; four 15/32 in. diam mtg holes spaced 4-1/4 in. c to c 90° apart; CAYU type C-4300-T10; CBTL part/dwg NL-983345-1-3 | Shock Mount |
| A-3302 | N17-M-75284-2052 | MOUNT, RESILIENT: sq mtg; 100 to 125 lb load rating; 5-1/4 in. sq by 2-1/2 in. h; natural rubber cushion material; 5/32 in. thk, mtg form; center sleeve mild steel; 5/8 in. -11 tapped center hole, 7/8 in. d; holder mild steel; four 15/32 in. diam holes spaced 4-1/4 in. c to c 90° apart; CAYU type C-4125-T10; CBTL part/dwg NL-983345-1-1 | Shock Mount |
| A-3303 | | Same as A-3301 | Shock Mount |
| A-3304 | | Same as A-3301 | Shock Mount |
| A-3305 | | Same as A-3301 | Shock Mount |
| A-3306 | | Same as A-3302 | Shock Mount |
| A-3307 | | Same as A-3302 | Shock Mount |
| A-3308 | | Same as A-3302 | Shock Mount |
| A-3309 | N16-C-650002-157 | COVER, CW-341/SRT: steel; grey enamel finish; o/a dimen 24-9/16 in. lg, 16 in. wd, 2-7/16 in. h; mts by means of 6 machine screws which are tack welded to the cover; same as | For Modulator-Power Supply Group OA-685/SRT |

* These kits are the same in every respect except for the nameplates and covers.

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|-------------------------|---|--|---|
| A-3309 (cont) | | COVER CW-341A/SRT except for material; p/o AN/SRT-15; CBTL part/dwg NL-981628-14 | |
| A-3310 | N16-C-650002-158 | COVER, CW-341A/SRT: aluminum; grey enamel finish; o/a dimen 24-9/16 in. lg, 16 in. wd, 2-7/16 in. h; mts by means of 6 machine screws which are tack welded to the cover; same as COVER, CW-341/SRT except for material; non-magnetic version; p/o AN/SRT-15A; CBTL part/dwg NL-901219-14 | For Modulator-Power Supply Group OA-685A/SRT |
| H-3301 | Procured on demand by nearest Naval Shore Supply Activity | CLAMP, ELECTRICAL: aluminum; anodized grey; 0.828 in. ID open for friction mtg to cable; 4.105 in. lg, 1.510 in. diam; mts to connector by 1.3750 in. -18 NEF-2 internal thd; designed to hold cable 0.680 in. diam min to 0.820 in. diam max; eyelet for chain provided, wrench flats; CBET part 10-35952-244 | Cable Clamp |
| H-3302 | | Same as H-3301 | Cable Clamp |
| H-3303 | | Same as H-3301 | Cable Clamp |
| H-3304 | Procured on demand by nearest Naval Shore Supply Activity | CLAMP, ELECTRICAL: aluminum; anodized grey; 1.490 in. ID open for friction mtg to cable; 4.230 in. lg, 2.010 in. diam; mts to connector by 1.8750 in. -16 N-2 internal thd; designed to hold cable 1.310 in. diam min to 1.490 in. diam max; eyelet for chain provided, wrench flats; CBET part 10-35952-321 | Cable Clamp |
| H-3305 | | Same as H-3304 | Cable Clamp |
| H-3306 | | Same as H-3304 | Cable Clamp |
| H-3307 | Shop Manufacture | COVER, ELECTRICAL EQUIPMENT: metallic, corrosion resistant; 1.209 in. lg less chain, 1.750 in. wd across wrench flats, chain approx 5.500 in. lg; internal thd 2 in. -18 NEF-2, has internal key; CBET part 10-35963-32 | Connector Cover |
| H-3308 | | Same as H-3307 | Connector Cover |
| H-3309 | | Same as H-3307 | Connector Cover |
| H-3310 | Shop Manufacture | COVER, ELECTRICAL EQUIPMENT: metallic, corrosion resistant; 1.209 in. lg less chain, 1.250 in. wd across wrench flats, chain approx 5.000 lg; external thd 1-1/2 in. -18 NEF-2, has internal key; CBET part 10-35963-24 | Connector Cover |
| H-3311 | | Same as H-3310 | Connector Cover |
| H-3312 | | Same as H-3310 | Connector Cover |
| H-3313 | Low Failure Item | BOLT, eye: forged steel, zinc pl; 1/2 in. -13 machine thd; 3-1/8 in. lg o/a; 3/4 in. lg thd portion; shoulder, 1 in. diam by 3/16 in. thk; 1-3/16 in. ID of eye; less nuts; CBTL part/dwg NL-983347-1 | For Installation |
| H-3313.1 thru H-3313.3 | | Same as H-3313 | For Installation |
| H-3314 | Low Failure Item | INSERT, leveling: corrosion resisting steel, passivate; 5/8 in. -18 NF-2 external thd, 9/32 in. wd, 0.316 in. ID; CBTL part/dwg NL-982598-1 | For Leveling Cabinets |
| H-3314.1 thru H-3314.13 | | Same as H-3314 | For Leveling Cabinets |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|-------------------------------|---|--|-----------------------|
| H-3315 | Procured on demand by nearest Naval Shore Supply Activity | BUTTON, plug: brass, cad pl; for 7/16 in. diam hole; 3/4 in. diam, 5/16 in. h o/a; CUF part 51117 | Cabinet Plug |
| H-3315.1 thru H-3315.17 | | Same as H-3515 | Cabinet Plug |
| H-3316 | N17-C-781366-251 | CLAMP, ELECTRICAL: aluminum alloy; tin pl; saddle clamp fastening device w/2 filister hd machine screws; o/a dimen 29/32 in. lg by 1.047 in. OD; no mtg facilities; designed to hold material 7/16 in. diam max; 3/4 in. -20 NEF coupling thd; rubber bushing & fibre washer incl; per spec MIL-C-5015; MIL type AN-3057-6; p/o W-3301 | Cable Clamp |
| H-3317 | Low Failure Item | INSERT, leveling: corrosion resisting steel, passivate; 9/16 in. -18 NF-2 external thd, 9/32 in. wd, 0.316 in. ID; CBTL part/dwg NL-901561-1 | For Leveling Cabinets |
| H-3317.1 | | Same as H-3317 | For Leveling Cabinets |
| H-3318 | Procured on demand by nearest Naval Shore Supply Activity | BUTTON, Plug: brass, cad pl; for 5/16 in. diam hole; 7/16 in. diam, 7/32 in. h o/a; CUF part 48199 | Cabinet Plug |
| H-3318.1 thru H-3318.17 | | Same as H-3318 | Cabinet Plug |
| P-3301 | N17-C-71339-4961 | CONNECTOR, PLUG, ELECTRICAL: 30 contacts; 6 size 12 contacts, 24 size 16 contacts; one mating end; female, 41 and 22 amp current rating, 700v DCW, 500v RMS; synthetic rubber; straight shape; 1.890 in. lg, 2.251 in. diam o/a; w/enclosing shell, aluminum base alloy, resistant to corrosion; polarized; locking type, 2 in. -18 NEF-2 thd coupling nut; 2.047 in. diam max cable accommodated; watertight; resistant to shock and vibration; CBET part 10-64632-8S | Mates w/J-3502 |
| P-3302 | N17-C-71330-8888 | CONNECTOR, PLUG, ELECTRICAL: 24 contacts; size 16 m; one mating end; female, 22 amp current rating; 700v DCW, 500v RMS; synthetic rubber; straight shape; 1.827 in. lg, 1.742 in. diam o/a; w/enclosing shell, aluminum base alloy, resistant to corrosion; polarized; locking type, 1-1/2 in. -18 NEF-2 thd coupling nut; 1.547 in. diam max cable accommodated; watertight; resistant to shock and vibration; CBET part 10-64624-28S | Mates w/J-3504 |
| P-3303 | N17-C-71628-3701 | CONNECTOR, PLUG, ELECTRICAL: 24 contacts, size 16 m; one mating end; male, 22 amp current rating, 700v DCW, 500v RMS; synthetic rubber; straight shape, 1.827 in. lg, 1.742 in. diam o/a; w/enclosing shell, aluminum base alloy; resistant to corrosion; polarized; locking type, 1-1/2 in. -18 NEF-2 thd coupling nut; 1.547 in. diam max cable accommodated; watertight; resistant to shock and vibration; CBET part 10-64624-28P | Mates w/J-3503 |
| P-3304 | N17-C-71643-3555 | CONNECTOR, PLUG, ELECTRICAL: 30 contacts, 6 size 12 contacts, 24 size 16 contacts; one mating end; male, 41 and 22 amp current rating, 700v DCW, 500v RMS; synthetic rubber; straight shape; 1.890 in. lg, 2.251 in. diam o/a; w/enclosing | Mates w/J-3501 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|-----------------------------------|
| P-3304 (cont) | | shell, aluminum base alloy, resistant to corrosion; polarized; locking type, 2 in. -18 NEF-2 thd coupling nut; 2.047 in. diam max cable accommodated; watertight; resistant to shock and vibration; CBET part 10-64632-8P | |
| P-3305 | | Same as P-3302 | Mates w/J-302 |
| P-3306 | | Same as P-3301 | Mates w/J-301 |
| P-3307 | N17-C-71422-3137 | CONNECTOR, PLUG, ELECTRICAL: 1 contact; one mating end; male; insulation and center contact provided by dielectric and center conductor of cable; straight shape; 3 in. lg, 1-1/2 in. diam o/a; w/enclosing shell, copper base alloy, resistant to corrosion, precious metal pl; polarized; locking type, 1-1/4 in. -18 internal thd coupling nut; environment resistant; per MIL-C-3650; MIL type UG-154/U | Mates w/J-3506 |
| P-3308 | N17-C-71419-4088 | CONNECTOR, PLUG, ELECTRICAL: 1 contact; one mating end; male, 50 ohm impedance; low loss plastic; straight shape; 2-3/8 in. lg, 1-5/16 in. diam o/a; w/enclosing shell, copper base alloy, resistant to corrosion, precious metal pl; polarized; locking type, 5/8 in. -24 thd coupling nut; environment resistant; per MIL-C-71A; MIL type UG-167A/U | Mates w/J-3202 |
| P-3309 | | Same as P-3307 | Mates w/J-3505 |
| P-3310 | | Same as P-3307 | Mates w/J-303 |
| P-3311 | Low Failure Item | ADAPTER: brass, cad pl; 3/4 in. OD, 1-3/4 in. lg, 0.257 in. ID one end, 0.193 in. ID other end; four no. 6-32 NC-2 tapped holes thru one wall; CBTL part/dwg A2011254 | Mates w/W-3502 |
| P-3312 | | Same as P-3311 | |
| P-3313 | For Replacement Use N17-C-71117-2439 | CONNECTOR, PLUG, ELECTRICAL: one contact; one mating end; female, 50 ohms impedance; low loss plastic; straight shape; 1-15/16 in. lg, 11/16 in. diam o/a; w/enclosing shell, copper base alloy, resistant to corrosion, precious metal pl; polarized; locking type, 5/8 in. -24 thd coupling nut; environment resistant; per MIL-C-71A; MIL type UG-23B/U | Mates w/P-610 |
| P-3314 | For Replacement Use N17-C-71417-9699 | CONNECTOR, PLUG, ELECTRICAL: one contact; one mating end; male; 50 ohm impedance; low loss plastic; straight shape; 1-7/8 in. lg, 13/16 in. diam o/a; w/enclosing shell, copper base alloy, resistant to corrosion, precious metal pl; polarized; locking type, 5/8 in. -24 thd coupling nut; environment resistant; per MIL-C-71A; MIL type UG-21B/U; same as P-301 | Mates w/J-3201 |
| P-3315 | For Replacement Use N17-C-70588-1524 | CONNECTOR, PLUG, ELECTRICAL: 3 size 16 contacts, male, round; polarized; straight type; 1-1/8 in. OD by 2-1/16 in. lg o/a dimen; contacts rated at 20 amps, 200v DC, 150v AC (RMS); cylindrical, aluminum alloy, tin pl, split shell; molded thermo-setting plastic insert; 3/4 in. -20 conduit thd; 1-1/8 in. OD of coupling nut, 7/8 in. -20 coupling thd; per spec MIL-C-5015; MIL type AN-3106B-14S-7P; p/o W-3301 | Mates w/J-3203 |
| W-3301 | Assemble from Component Parts | CABLE ASSEMBLY: special purpose; MIL type CO-02LGF (2/18)SJ 0350 per MIL-C-3432; 14 ft lg; one end terminated incl P-3315 and H-3316; CBTL part/dwg NL-901214-2 | Interconnecting Cable Assembly |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|--------------------------|---|--|----------------------|
| 3301-3399 | N16-M-384502-0440 | *INSTALLATION KIT, MK-234/SRT-16; provides material to install Radio Transmitting Set AN/SRT-16; consists of shock-mounts, interstack cable harnesses, connectors and accessories, cable assemblies, main test cable accessories, mtg hardware, nameplate and instruction book; CBTL part/dwg NL-983336-1-3 | |
| 3301-3399 | N16-M-384502-0441 | *INSTALLATION KIT, MK-235/SRT-16A; provides material to install Radio Transmitting Set AN/SRT-16A; consists of shock-mounts, interstack cable harnesses, connectors and accessories, cable assemblies, main test cable accessories, mtg hardware, nameplate and instruction book; CBTL part/dwg NL-983336-1-6 | |
| A-3301 | N17-M-99999-129 | MOUNT, RESILIENT: sq mtg; 250 to 350 lb load rating; 5-1/4 in. sq by 2-1/2 in. h; natural rubber cushion material, 5/32 in. thk mtg form; center sleeve mild steel, 5/8 in. -11 tapped center hole, 7/8 in. d; holder mild steel; four 15/32 in. diam mtg holes spaced 4-1/4 in. c to c 90° apart; CAYU type C-4300-T10; CBTL part/dwg NL-983345-1-3 | Shock Mount |
| A-3302 | | Not Used | |
| A-3303 | | Same as A-3301 | Shock Mount |
| A-3304 | | Same as A-3301 | Shock Mount |
| A-3305 | | Same as A-3301 | Shock Mount |
| A-3306 thru A-3310 | | Not Used | |
| A-3311 | | Same as A-3301 | Shock Mount |
| A-3312 | | Same as A-3301 | Shock Mount |
| A-3313 | | Same as A-3301 | Shock Mount |
| A-3314 | | Same as A-3301 | Shock Mount |
| H-3301 | Procured on demand by nearest Naval Shore Supply Activity | CLAMP, ELECTRICAL: aluminum; anodized grey; 0.828 in. ID open for friction mtg to cable; 4.105 in. lg, 1.510 in. diam; mts to connector by 1.3750 in. -18 NEF-2 internal thd; designed to hold cable 0.680 in. diam min to 0.820 in. diam max; eyelet for chain provided, wrench flats; CBET part 10-35952-244 (2 required) | Cable Clamp |
| H-3302 | | Same as H-3301 (2 required) | Cable Clamp |
| H-3303 | | Same as H-3301 (2 required) | Cable Clamp |
| H-3304 | Procured on demand by nearest Naval Shore Supply Activity | CLAMP, ELECTRICAL: aluminum; anodized grey; 1.490 in. ID open for friction mtg to cable; 4.230 in. lg, 2.010 in. diam; mts to connector by 1.8750 in. -16 N-2 internal thd; designed to hold cable 1.310 in. diam min to 1.490 in. diam max; eyelet for chain provided, wrench flats; CBET part 10-35952-321 (2 required) | Cable Clamp |
| H-3305 | | Same as H-3304 (2 required) | Cable Clamp |
| H-3306 | | Same as H-3304 (2 required) | Cable Clamp |

* These kits are the same in every respect except for the nameplates and covers.

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|-------------------------------|---|--|-----------------------|
| H-3307 | Shop Manufacture | COVER, ELECTRICAL EQUIPMENT: metallic, corrosion resistant; 1.209 in. lg less chain, 1.750 in. wd across wrench flats, chain approx 5.500 in. lg; internal thd 2 in. -18 NEF-2, has internal key; CBET part 10-35963-32 (2 required) | Connector Cover |
| H-3308 | | Same as H-3307 (2 required) | Connector Cover |
| H-3309 | | Same as H-3307 (2 required) | Connector Cover |
| H-3310 | Shop Manufacture | COVER, ELECTRICAL EQUIPMENT: metallic, corrosion resistant; 1.209 in. lg less chain, 1.250 in. wd across wrench flats, chain approx 5.000 lg; external thd 1-1/2 in. -18 NEF-2, has internal key; CBET part 10-35963-24 (2 required) | Connector Cover |
| H-3311 | | Same as H-3310 (2 required) | Connector Cover |
| H-3312 | | Same as H-3310 (2 required) | Connector Cover |
| H-3313 | Low Failure Item | BOLT, eye: forged steel, zinc pl; 1/2 in. -13 machine thd; 3-1/8 in. lg o/a; 3/4 in. lg thd portion; shoulder, 1 in. diam by 3/16 in. thk; 1-3/16 in. ID of eye; less nuts; CBTL part/dwg NL-983347-1 | For Installation |
| H-3313.1 thru H-3313.7 | | Same as H-3313 | For Installation |
| H-3314 | Low Failure Item | INSERT, leveling: corrosion resisting steel, passivate; 5/8 in. -18 NF-2 external thd, 9/32 in. wd, 0.316 in. ID; CBTL part/dwg NL-982598-1 | For Leveling Cabinets |
| H-3314.1 thru H-3314.23 | | Same as H-3314 | For Leveling Cabinets |
| H-3315 | Procured on demand by nearest Naval Shore Supply Activity | BUTTON, plug: brass, cad pl; for 7/16 in. diam hole; 3/4 in. diam, 5/16 in. h o/a; CUF part 51117 | Cabinet Plug |
| H-3315.1 thru H-3315.27 | | Same as H-3315 | Cabinet Plug |
| H-3316 | N17-C-781366-251 | CLAMP, ELECTRICAL: aluminum alloy; tin pl; saddle clamp fastening device w/2 filister hd machine screws; o/a dimen 29/32 in. lg by 1.047 in. OD; no mtg facilities; designed to hold material 7/16 in. diam max; 3/4 in. -20 NEF coupling thd; rubber bushing & fibre washer incl; per spec MIL-C-5015; MIL type AN-3057-6; p/o W-3301 | Cable Clamp |
| H-3316.1 | | Same as H-3316 | Cable Clamp |
| H-3317 | Low Failure Item | INSERT, leveling: corrosion resisting steel, passivate; 9/16 in. -18 NF-2 external thd, 9/32 in. wd, 0.316 in. ID; CBTL part/dwg NL-901561-1 | For Leveling Cabinets |
| H-3317.1 thru H-3317.3 | | Same as H-3317 | For Leveling Cabinets |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|---------------------------|---|---|-------------------|
| H-3318 | Procured on demand by nearest Naval Shore Supply Activity | BUTTON, plug: brass, cad pl; for 5/16 in. diam hole; 7/16 in. diam, 7/32 in. h o/a; CUF part 48199 | Cabinet Plug |
| H-3318. 1 thru H-3318. 27 | | Same as H-3318 | Cabinet Plug |
| P-3301 | N17-C-71339-4961 | CONNECTOR, PLUG, ELECTRICAL: 30 contacts; 6 size 12 contacts, 24 size 16 contacts; one mating end; female, 41 and 22 amp current rating, 700v DCW, 500v RMS; synthetic rubber; straight shape; 1.890 in. lg, 2.251 in. diam o/a; w/enclosing shell, aluminum base alloy, resistant to corrosion; polarized; locking type, 2 in. -18 NEF-2 thd coupling nut; 2.047 in. diam max cable accommodated; watertight; resistant to shock and vibration; CBET part 10646-32-8S (2 required) | Mates w/J-3502 |
| P-3302 | N17-C-71330-8888 | CONNECTOR, PLUG, ELECTRICAL: 24 contacts; size 16 m; one mating end; female, 22 amp current rating; 700v DCW, 500v RMS; synthetic rubber; straight shape; 1.827 in. lg, 1.742 in. diam o/a; w/enclosing shell, aluminum base alloy, resistant to corrosion; polarized; locking type, 1-1/2 in. -18 NEF-2 thd coupling nut; 1.547 in. diam max cable accommodated; watertight; resistant to shock and vibration; CBET part 10-64624-28S (2 required) | Mates w/J-3504 |
| P-3303 | N17-C-71628-3701 | CONNECTOR, PLUG, ELECTRICAL: 24 contacts, size 16 m; one mating end; male, 22 amp current rating, 700v DCW, 500v RMS; synthetic rubber; straight shape; 1.827 in. lg, 1.742 in. diam o/a; w/enclosing shell, aluminum base alloy; resistant to corrosion; polarized; locking type, 1-1/2 in. -18 NEF-2 thd coupling nut; 1.547 in. diam max cable accommodated; watertight; resistant to shock and vibration; CBET part 10-64624-28P (2 required) | Mates w/J-3503 |
| P-3304 | N17-C-71643-3555 | CONNECTOR, PLUG, ELECTRICAL: 30 contacts, 6 size 12 contacts, 24 size 16 contacts; one mating end; male, 41 and 22 amp current rating, 700v DCW, 500v RMS; synthetic rubber; straight shape; 1.890 in. lg, 2.251 in. diam o/a; w/enclosing shell, aluminum base alloy, resistant to corrosion; polarized; locking type, 2 in. -18 NEF-2 thd coupling nut; 2.047 in. diam max cable accommodated; watertight; resistant to shock and vibration; CBET part 10-64632-8P (2 required) | Mates w/J-3501 |
| P-3305 | | Same as P-3302 (2 required) | Mates w/J-302 |
| P-3306 | | Same as P-3301 (2 required) | Mates w/J-301 |
| P-3307 | N17-C-71422-3137 | CONNECTOR, PLUG, ELECTRICAL: 1 contact; one mating end; male, insulation and center contact provided by dielectric and center conductor of cable; straight shape; 3 in. lg, 1-1/2 in. diam o/a; w/enclosing shell, copper base alloy, resistant to corrosion, precious metal pl; polarized; locking type, 1-1/4 in. -18 internal thd coupling nut; environment resistant; per MIL-C-3650; MIL type UG-154/U (2 required) | Mates w/J-3506 |
| P-3308 | N17-C-71419-4088 | CONNECTOR, PLUG, ELECTRICAL: 1 contact; one mating end; male; 50 ohm impedance; low loss plastic; straight shape; 2-3/8 in. lg, 1-5/16 in. diam o/a; w/enclosing shell, copper base alloy, resistant to corrosion, precious metal pl; polarized; locking type, 5/8 in. -24 thd coupling nut; environment resistant; per MIL-C-71A; MIL type UG-167A/U (2 required) | Mates w/J-3202 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--------------------------------|
| P-3309 | | Same as P-3307 (2 required) | Mates w/J-3505 |
| P-3310 | | Same as P-3307 (2 required) | Mates w/J-303 |
| P-3311 | Low Failure Item | ADAPTER: brass, cad pl; 3/4 in. OD, 1-3/4 in. lg, 0.257 in. ID one end, 0.193 in. ID other end; four no. 6-32 NC-2 tapped holes thru one wall; CBTL part/dwg A2011254 (2 required) | Mates w/W-3502 |
| P-3312 | | Same as P-3311 (2 required) | Mates w/W-301 |
| P-3313 | For Replacement Use N17-C-71117-2439 | CONNECTOR, PLUG, ELECTRICAL: one contact; one mating end; female, 50 ohms impedance; low loss plastic; straight shape; 1-15/16 in. lg, 11/16 in. diam o/a; w/enclosing shell, copper base alloy, resistant to corrosion, precious metal pl; polarized; locking type, 5/8 in. -24 thd coupling nut; environment resistant; per MIL-C-71A; MIL type UG-23B/U (2 required) | Mates w/P-610 |
| P-3314 | For Replacement Use N17-C-71417-9699 | CONNECTOR, PLUG, ELECTRICAL: one contact; one mating end; male, 50 ohm impedance; low loss plastic; straight shape; 1-7/8 in. lg, 13/16 in. diam o/a; w/enclosing shell, copper base alloy, resistant to corrosion, precious metal pl; polarized; locking type, 5/8 in. -24 thd coupling nut; environment resistant; per MIL-C-71A; MIL type UG-21B/U (2 required); same as P-301 | Mates w/J-3201 |
| P-3315 | For Replacement Use N17-C-70588-1524 | CONNECTOR, PLUG, ELECTRICAL: 3 size 16 contacts, male, round; polarized; straight type; 1-1/8 in. OD by 2-1/16 in. lg o/a dimen; contacts rated at 20 amps, 200v DC, 150v AC (RMS); cylindrical, aluminum alloy, tin pl, split shell; molded thermosetting plastic insert; 3/4 in. -20 conduit thd; 1-1/8 in. OD of coupling nut, 7/8 in. -20 coupling thd; per spec MIL-C-5015; MIL type AN-3106B-14S-7P; p/o W-3301 (2 required) | Mates w/J-3203 |
| W-3301 | Assemble from Component Parts | CABLE ASSEMBLY: special purpose; MIL type CO-02LGF (2/18)SJ 0350 per MIL-C-3432; 14 ft lg; one end terminated incl P-3315 and H-3316; CBTL part/dwg NL-901214-2 (2 required) | Interconnecting Cable Assembly |
| 3501-3599 | F16-C-91733-5588 | COUPLER, ANTENNA, CU-372/SRT: electronic coupling; frequency range 300 kc to 26 mc; operating power requirements 110v AC, 60 cyc; variable type tuning; RF level 100-500 w max power capacity; 8 term, connector and cable extrusion type; aluminum case; o/a dimen 28 in. lg, 16 in. wd, 13-1/2 in. h; clamp-type shock mtg; pressurized capsule assembly containing high voltage switches, capacitors and conductors; w/o spares; p/o AN/SRT-14, 15, 16; CBTL part/dwg J-2011110 | |
| A-3501 | N17-M-75320-6496 | MOUNT, RESILIENT: round mtg; 30-40 lb load rating; 3 in. sq by 1-1/2 in. h o/a; natural rubber cushion, irregular shape; 3/8 in. -16 coarse thd center core; mild steel case; four 0.266 in. diam holes 2-1/2 in. c to c; CAYU part 2040T6; CBTL part/dwg A-2010941-2 | Shock Mount |
| A-3502 | | Same as A-3501 | Shock Mount |
| A-3503 | N17-M-75361-8113 | MOUNT, RESILIENT: round mtg; 15-20 lb load rating; 3 in. sq by 1-1/2 in. h o/a; natural rubber cushion; irregular shape; 3/8 in. -16 coarse thd center core; mild steel case; four 0.266 in. diam holes 2-1/2 in. c to c; CAYU part 2020T6; CBTL part/dwg A-2010941-1 | Shock Mount |
| A-3504 | | Same as A-3503 | Shock Mount |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|-------------------|
| B-3501 | N17-E-39071-3797 | ELECTROMAGNETIC ACTUATOR: rotary type moving element; rotary motion produced, approx 3/4 degree arc stroke with 6 lb in. torque; 120 impulses per second max; 115v, 60 cyc AC operating voltage, 150 w full load input power, non-polarized, coil ungrounded; 2 flexible wire lead term, 12 in. lg; o/a dimen 3-19/64 in. lg including 1-1/8 in. shaft projection, 2 in. wd, 2 in. h; four no. 8-32 thd mtg holes irregularly spaced as indicated by bosses; operates at 125°C ambient temp; CCDD Model AM-200 per CBTL part/dwg C-2011052; p/o S-3513; same as B-303 | Switch Drive |
| B-3502 | | Same as B-3501; p/o S-3514 | Switch Drive |
| C-3501 | N16-C-99999-1177 | CAPACITOR, FIXED, VACUUM DIELECTRIC: 1 section; 75 mmf, 20,000v RF peak rating; 60 amp max (RMS); style no. 28-P, Ref Dwg Group 1; pyrex glass enclosure; 2 end cap type term located one at each end, 13/16 in. diam by 3/4 in. lg; cap mtd; 4-1/2 in. lg by 2-5/8 in. OD o/a dimen; non magnetic, no RF pickup; copper to glass seals; CCCQ type VC 75-20; CBTL part/dwg B-2011044 | Loading Capacitor |
| C-3502 | N16-C-17088-6751 | CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1 section; 15,000v DCW, 100 mmf, ±10%; style no. 29-P, Ref Dwg Group 1; insulated body; o/a dimen 1.270 in. diam of case, 1.890 in. lg of case; two term tapped hole type, 1/2 in. OD by 0.289 in. lg; schematic diagram no. 1-R, Ref Dwg Group 1; two no. 10-32 NF-2 thd mtg holes 1/4 in. d, axially located one at each end; humidity resistant; CBN part no. 857-100N; CBTL part/dwg B-2011476 | Loading Capacitor |
| C-3503 | | Same as C-3502 | Loading Capacitor |
| E-3501 | N17-C-81587-8340 | CONTACT, ELECTRICAL: contact incl conducting point, 1 point, solid rivet, silver, dimen 0.245 in. diam, 0.187 in. h; phosphor bronze, silver pl finish; o/a dimen 0.906 in. lg, 0.375 in. OD; contact inserted and soft soldered on 1 end, other end slotted (6 slots); spring mtd; CBTL part/dwg A-2011100; same as E-302 | Stator Contact |
| E-3502 | | Same as E-3501 | Stator Contact |
| E-3503 | | Same as E-3501 | Stator Contact |
| E-3504 | | Same as E-3501 | Stator Contact |
| E-3505 | | Same as E-3501 | Stator Contact |
| E-3506 | | Same as E-3501 | Stator Contact |
| E-3507 | | Same as E-3501 | Stator Contact |
| E-3508 | | Same as E-3501 | Stator Contact |
| E-3509 | | Same as E-3501 | Stator Contact |
| E-3510 | | Same as E-3501 | Stator Contact |
| E-3511 | | Same as E-3501 | Stator Contact |
| E-3512 | | Same as E-3501 | Stator Contact |
| E-3513 | | Same as E-3501 | Stator Contact |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--|
| E-3514 | | Same as E-3501 | Stator Contact |
| E-3515 | | Same as E-3501 | Stator Contact |
| E-3516 | | Same as E-3501 | Stator Contact |
| E-3517 | N17-T-24601-1453 | CHAMBER, CABLE TERMINAL: single hole, straight type; o/a dimen 2-7/16 in. lg by 1-5/8 in. across flats incl hex coupling nut; cylindrical w/hex flange 1-1/2 in. across flats; steel, 1 in. -11-1/2 NP thd at both ends; tapered silicon rubber bushing insert; 0.875 in. diam max cable opening; water-tight; CCH type CGB 397; CBTL part/dwg B-2010834; same as E-317 | Cable Support for W-3502 |
| E-3518 | | Same as E-3517 | Cable Support for W-3501 |
| E-3519 | For Reference Only | CONTACT, ELECTRICAL: contacts incl conducting points; 2 points; 4-3/8 in. lg, 3/8 in. wd, 1-1/16 in. h o/a; brass casting per Navy spec 46B31, silver pl finish; 1-3/8 in. from first mtg hole to contact surface; three no. 6-32 in. NC-2 tapped mtg holes spaced 0.750 in. c to c; CBTL part/dwg B-2011155; p/o S-3512 | p/o S-3512 |
| E-3520 | | Same as E-3519; p/o S-3512 | p/o S-3512 |
| E-3521 | For Reference Only | CONTACT, ELECTRICAL: contacts incl conducting points; 2 points; 4-15/16 in. lg, 3/8 in. wd, 1 in. h o/a; brass casting per Navy spec 46B31, silver pl finish; 1-1/2 in. from first mtg hole to contact surface; three no. 6-32 in. NC-2 tapped mtg holes spaced 0.875 in. c to c; CBTL part/dwg B-2011154; p/o S-3511 | p/o S-3511 |
| E-3522 | | Same as E-3521; p/o S-3511 | p/o S-3511 |
| E-3523 | N17-I-70074-6701 | INSULATOR, STANDOFF: ceramic body, bronze base; glazed sides on insulator, nickel pl base; cylindrical shape w/metal base and cap, item code no. 28, MBCA Ref Dwg Group 9; 1-1/4 in. diam of insulator, o/a lg 6 in., dimen of base 3-5/16 in. lg by 1 in. h; two 11/32 in. diam mtg holes in base on 2-5/8 in. mtg/c; two 1/4 in. -20 NC-2 thd holes in top spaced 13/16 in. c to c; heavy duty type insulator, low power and loss factor; CBU type no. 414-C-6; CBTL part/dwg B-2011447 | Antenna Lead-In Support |
| E-3524 | N17-T-28255-2601 | INSULATOR, STANDOFF: molded, asbestos filled, melamine; 14,000v DC breakdown voltage; turret type, not in MBCA Ref Dwg Group 9; 7/8 in. h by 1/4 in. across flats of hex base o/a dimen; term hot tin dip; mtg by means of no. 4-40 thd by 5/32 in. d, brass, cad pl insert w/no. 4-40 thd brass, cad pl machine screw; CCK type 763; CBTL part/dwg A-2011167-2 | Tie Point |
| E-3525 | | Same as E-3524 | Tie Point |
| H-3501 | Low Failure Item | GLAND: silicone rubber; OD 24° taper, 3/4 in. OD at large end, 1/2 in. diam at smaller end, 5/8 in. wd, 3/16 in ID; CBTL part/dwg A-2010840; same as H-301 | u/w J-3505 |
| H-3502 | | Same as H-3501 | u/w J-3506 |
| H-3503 | Low Failure Item | WRENCH: c/o 1/4 in. hex stem, cup 13/16 in. OD and two 1/2 in. lg by 0.625 in. diam pins; cold rolled steel, nickel pl; 7/8 in. lg by 13/16 in. diam o/a dimen; 0.750 in. diam by 90° | Special Wrench for Contact Button Assy |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--------------------------------|
| H-3503 (cont) | | countersink opening in cup; 1/8 in. diam hole thru cup 7/32 in. from stem end; CBTL part/dwg A-2011489; same as H-302 | |
| I-3501 | N17-G-99999-0329 | GAUGE, PRESSURE, DIAL INDICATING: dial and pointer type; 0 to 30 psi; single reading; 1-1/2 in. dial size; black pointer; brass case, black enamel finish, 1-5/8 in. OD by 1-17/32 in. lg o/a; equipment mtd; 5/8 in. lg pipe with 1/8 in. pipe thd 3/8 in. lg; CBTL part/dwg A-2010896; same as I-301 | Pressure Gauge |
| J-3501 | N17-C-99999-1180 | CONNECTOR, RECEPTACLE, ELECTRICAL: 6 size 12 contacts, 24 size 16 contacts, female, round; polarized; 2-1/4 in. sq by 1.578 in. lg excluding contacts o/a dimen; size 12 contacts rated at 35 amp, size 16 contacts 20 amp, 200v DC, 150v AC (RMS); box mtg receptacle, straight type, cylindrical with sq mtg flange; aluminum alloy, cadmium pl; molded resilient polychloroprene insert; 2 in. -18 NEF-2 thread on shell; 4 mtg holes 0.173 in. diam spaced 1.750 in. c to c; panel mtg, pressure tight fitting; moisture proof-vibrant resistant; per spec MIL-C-5015A; MIL type AN 3102E-32-8S | Control Cable Connection |
| J-3502 | For Replacement Use N17-C-99999-1183 modified per description | CONNECTOR, RECEPTACLE, ELECTRICAL: 6 size 12 contacts, 24 size 16 contacts, male, round; polarized; 2 in. diam by 59/64 in. lg excluding contacts o/a dimen; size 12 contacts rated at 35 amp, size 16 contacts 20 amp, 200v DC, 150v AC (RMS); straight type, cylindrical, steel, cadmium pl; vitreous insulator inserts fused to pins and shell; hermetically sealed; 2 in. -18 thd on shell; solder mtd to panel; CED type GS02-32-8P001 modified by undercut; CBTL part/dwg B-2011484 Part 2 | Control Cable Connection |
| J-3503 | N17-C-99999-1182 | CONNECTOR, RECEPTACLE, ELECTRICAL: 24 size 16 contacts, female, round; polarized; 1-3/4 in. sq by 1.578 in. lg excluding contacts o/a dimen; contacts rated 22 amp, 70v DC, 50v AC (RMS); box mtg receptacle, straight type, cylindrical w/sq mtg flange; aluminum alloy, cadmium pl; molded resilient polychloroprene insert; 1-1/2 in. no. 18 NEF-2 thd on shell; 4 mtg holes 0.147 in. diam spaced 1.375 in. c to c; panel mtg, pressure tight fitting; moisture proof-vibrant resistant; per spec MIL-C-5015A; MIL type AN3102E-24-28S | Control Cable Connection |
| J-3504 | For Replacement Use N17-C-99999-1181 modified per description | CONNECTOR, RECEPTACLE, ELECTRICAL: 24 size 16 contacts, male, round; polarized; 59/64 in. lg, by 1.5 in. diam excluding term; contacts rated 22 amp, 70v DC, 50v AC (RMS); straight type receptacle, cylindrical, steel, cad pl; vitreous insulator inserts fused to pins and shell; hermetically sealed; 1-1/2 in. -18 thd on shell; solder mtd to panel; CED type GS02-24-28P-001 modified by undercut; CBTL part/dwg B-2011484 Part 1 | Control Cable Connection |
| J-3505 | N17-C-99999-1186 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female, round at each end; straight type; 2-1/2 in. lg by 2 in. sq o/a dimen; 5 kilovolts peak rating; RF connector, 50 ohm nominal impedance, non-constant frequency impedance characteristics; cylindrical shape w/sq mtg flange; brass, cad pl, silver pl inner conductor; 4 mtg holes 0.257 in. diam spaced 1.437 in. c to c; 1-1/4 in. -18 thd at both ends; panel mtg; weatherproof; MIL type UG-287/U except for pl; CBTL part/dwg B-2010849; same as J-304 | RF Connection from Tuner |
| J-3506 | | Same as J-3505 | RF Connection from Transmitter |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--------------------------|
| J-3507 | N17-C-99999-1185 | CONNECTOR, RECEPTACLE, ELECTRICAL: 24 size 16 contacts, male, round; polarized; 2-1/2 in. sq by 1-15/64 in. lg o/a dimen; contacts rated 22 amps, 70v DC, 50v AC (RMS); box mtg receptacle, straight type, cylindrical, steel, grey enamel-cad pl finish; vitreous insulator inserts fused to pins and shell; 1-1/2 in. -18 thd; 4 mtg holes 9/32 in. diam spaced 1.875 in. c to c; panel mtg, hermetically sealed; c/o CED type GS02-24-28P-001 with CBTL flange soldered to it; CBTL part/dwg A-2010844; same as J-302 | Control Lines Connection |
| K-3501 | N17-R-99999-0850 | RELAY, ARMATURE: 2C, MBCA Ref Dwg Group 4; DPDT, single break, 150v, 15 amp; 1 winding, 1 inductive winding, DC, 164 ohms, 24v operating voltage, 0.146 amp, operating current; 6 term for contacts, 2 term for coil; 1-15/16 in. lg, 1-5/8 in. wd, 1-1/2 in. h; mts by means of four no. 6-32 in. tapped holes 1-5/16 in. by 1/2 in. c to c; fast operate, fast release, high temp coil, open frame; CBTL part/dwg A-2011223; same as K-401 | Transfer Switch Control |
| L-3501 | For Reference Only | COIL, RF: 1 mh \pm 10% at 250 kc; 79 turns no. 85-36 Litz wire double silk enamel; bank wound; 2-13/32 in. winding lg; functions as series inductor; p/o L-3503 | Series Inductor |
| L-3502 | For Reference Only | COIL, RF: 700 mh \pm 10% at 790 kc; 58 turns no. 85-36 Litz wire double silk enamel; bank wound; 1-13/16 in. winding lg; functions as series inductor; p/o L-3503 | Series Inductor |
| L-3503 | N16-C-73350-1819 | COIL, RF: each section bank wound; silicone bonded fiber-glass coil form; 8-1/8 in. lg, 5.620 in. diam o/a; eight 0.266 in. diam mtg holes spaced 30° apart; CBTL part/dwg D-2011139; c/o L-3501 and L-3502 | Series Inductor |
| O-3501 | Shop Manufacture | GASKET: for bottom ring; Felpak, AN type F-3033; 13 holes; round, 7-15/16 in. OD, 6-7/16 in. ID, 1/16 in. thk; CBTL part/dwg C-2010994 | For Junction Box |
| O-3502 | Low Failure Item | SPRING: helical compression type; contact spring; 0.0254 in. diam beryllium copper wire, silver pl; 0.906 in. lg by 0.170 in. OD, 17 turns; R. H. turns; square ends; CBTL part/dwg A-2010781; same as O-310 | u/w Stator Contact |
| O-3503 | | Same as O-3502 | u/w Stator Contact |
| O-3504 | | Same as O-3502 | u/w Stator Contact |
| O-3505 | | Same as O-3502 | u/w Stator Contact |
| O-3506 | | Same as O-3502 | u/w Stator Contact |
| O-3507 | | Same as O-3502 | u/w Stator Contact |
| O-3508 | | Same as O-3502 | u/w Stator Contact |
| O-3509 | | Same as O-3502 | u/w Stator Contact |
| O-3510 | | Same as O-3502 | u/w Stator Contact |
| O-3511 | | Same as O-3502 | u/w Stator Contact |
| O-3512 | | Same as O-3502 | u/w Stator Contact |
| O-3513 | | Same as O-3502 | u/w Stator Contact |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|-------------------------|
| O-3514 | | Same as O-3502 | u/w Stator Contact |
| O-3515 | | Same as O-3502 | u/w Stator Contact |
| O-3516 | | Same as O-3502 | u/w Stator Contact |
| O-3517 | | Same as O-3502 | u/w Stator Contact |
| O-3518 | Low Failure Item | GEAR: spur; brass; straight teeth; 54 teeth; 24 pitch, 2.250 in. pitch diam; 0.437 in. bore, 1/4 in. face, 9/16 in. wd; straight face; hub 11/16 in. diam by 5/16 in. wd; one 0.055 in. diam hole in hub; 14-1/2° pressure angle; web style; CBH no. G265 modified; CBTL part/dwg A-2010967; p/o S-3514 | p/o S-3514 |
| O-3519 | N17-B-99999-0035 | BAR, ACTUATOR, ELECTRICAL SWITCH: stainless steel; irregular shape, w/oil impregnated bronze roller, 3/16 in. diam; o/a dimen 1-3/32 in. lg, 0.915 in. h, 11/32 in. wd excluding mtg screws; two 0.130 in. diam mtg holes located 0.96 in. c to c; side mtg, winterized, u/w micro switch V3-1; w/ two no. 4-40 by 5/8 in. round head machine screws; two no. 4-40 std hex nuts, two lockwashers; CMU type JV-5; p/o S-3513; same as O-315 | Actuator for S-3501 |
| O-3520 | | Same as O-3519, p/o S-3513 | Actuator for S-3502 |
| O-3521 | | Same as O-3519, p/o S-3513 | Actuator for S-3503 |
| O-3522 | | Same as O-3519, p/o S-3513 | Actuator for S-3504 |
| O-3523 | | Same as O-3519, p/o S-3513 | Actuator for S-3505 |
| O-3524 | | Same as O-3519, p/o S-3513 | Actuator for S-3506 |
| O-3525 | | Same as O-3519, p/o S-3514 | Actuator for S-3507 |
| O-3526 | | Same as O-3519, p/o S-3514 | Actuator for S-3508 |
| O-3527 | | Same as O-3519, p/o S-3514 | Actuator for S-3509 |
| O-3528 | | Same as O-3519, p/o S-3514 | Actuator for S-3510 |
| O-3529 | | Same as O-3518, p/o S-3513 | p/o S-3513 |
| O-3530 | Low Failure Item | GEAR: spur; brass; straight teeth; 54 teeth; 24 pitch, 2.250 in. pitch diam; 0.250 in. bore, 1/4 in. face, 9/16 in. wd; straight face; hub 11/16 in. diam by 5/16 in. wd; one no. 6-32 tapped hole and one 0.055 in. diam hole 90° apart on hub; 14-1/2° pressure angle; web style; CBH part G265 modified and CBTL bushing; CBTL part/dwg A-2010995 | u/w S-3511 |
| O-3531 | | Same as O-3530 | u/w S-3512 |
| O-3532 | N17-P-99999-0138 | PACKING, PREFORMED: neoprene; 2-1/8 in. OD, 1-3/4 in. ID, 3/16 in. thk; black; MIL type AN-6227B-30; same as O-346 | Gasket for J-3507 |
| O-3533 | N17-P-99999-0135 | PACKING, PREFORMED: neoprene; 8-1/2 in. OD, 8 in. ID, 1/4 in. thk; black; MIL type AN-6227B-72; same as O-350 | Gasket for Bottom Plate |
| O-3534 | N17-P-99999-0137 | PACKING, PREFORMED: neoprene; 1-1/2 in. OD, 1-1/4 in. ID, 1/8 in. thk; black; MIL type AN-6227B-23; same as O-347 | Gasket for J-3505 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|----------------------------|
| O-3535 | For Replacement Use N17-G-165093-821 | PACKING, PREFORMED: neoprene; 11 in. OD, 10-1/2 in. ID, 1/4 in. thk; black; MIL type AN-6227B-77; same as O-348 | Gasket for End Plate |
| O-3536 | N17-P-99999-0136 | PACKING, PREFORMED: neoprene; 3/8 in. OD, 1/4 in. ID, 1/16 in. thk; black; MIL type AN-6227B-5; same as O-352 | For Cap of Cable Extrusion |
| O-3537 | | Same as O-3536 | For Cap of Cable Extrusion |
| O-3538 | | Same as O-3536 | For Cap of Cable Extrusion |
| O-3539 | | Same as O-3536 | For Cap of Cable Extrusion |
| O-3540 | Shop Manufacture | GASKET: Felpak, AN type F3033; 5 holes; 1-7/8 in. sq by 1/16 in. thk o/a; four 3/16 in. mtg holes 1-3/8 in. c to c; CBTL part/dwg A-2011037 | For J-3503 |
| O-3541 | Shop Manufacture | GASKET: Felpak, AN type F3033; 5 holes; 2-3/8 in. sq by 1/16 in. thk o/a; four 3/16 in. mtg holes 1-3/4 in. c to c; CBTL part/dwg A-2011038 | For J-3501 |
| O-3542 | Low Failure Item | VALVE, relief: brass, beryllium copper, cad pl; 30 ±5 psi working pressure; 1/8 in. male pipe thd on valve seat; gas service; straight type; plunger check valve; spring loaded; o/a dimen 2-17/32 in. lg by 7/8 in. across hex flats; CCDA type 5431; CBTL part/dwg B-2010918; same as O-353 | Relief Valve |
| O-3543 | Low Failure Item | VALVE, air: charge valve for nitrogen; brass, nickel pl; incl 1/2 in. lg dome cap; 1-5/16 in. lg less cap by 7/16 in. hex flange; 1/8 in. I. P. thd at one end; CCDC part 1468 A8; same as O-309 | Charge Valve |
| O-3544 | G77-B-111-00702-0000 | BEARING, ball: single row radial; unshielded; light duty; 0.2756 in. bore, 0.8661 in. OD, 0.2756 in. wd; 7 balls; grease packed; ABEC-1 std tol; non-filling slot type; CCAE part 37K | For S-3511 |
| O-3545 | | Same as O-3544 | For S-3512 |
| O-3546 | | Same as O-3544 | For S-3514 |
| O-3547 | | Same as O-3544 | For S-3513 |
| O-3548 | | Same as O-3544 | For S-3511 |
| O-3549 | | Same as O-3544 | For S-3512 |
| O-3550 | | Same as O-3534 | For J-3506 |
| O-3551 | N16-R-651091-615 | RING, RETAINING: carbon spring steel, cad pl plain iridite dip; beveled; external, for shaft diam 1-7/8 in.; 1.735 in. ID by 0.062 in. thk; CCDE part 5102-187SMI | Retainer Ring |
| O-3552 | N16-R-651091-616 | RING, RETAINING: carbon spring steel, cad pl plain iridite dip; beveled; external, for shaft diam 1-3/8 in.; 1.272 in. ID by 0.050 in. thk; CCDE part 5102-137SMI | Retainer Ring |
| P-3501 | For Replacement Use N17-C-70369-4194 modified per description | CONNECTOR, PLUG, ELECTRICAL: 24 size 16 contacts, female, round; polarized; straight type; 1-5/16 in. lg excluding term, 1-25/32 in. diam o/a dimen; 20 amp, 70v DC, 50v AC (RMS); cylindrical shape, aluminum alloy; cad pl w/chromate dip finish; molded melamine | Control Lines Connection |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|--|--------------------------|
| P-3501 (cont) | | insulator insert; 1-1/2 in. -18 coupling thd; 1-23/32 in. OD coupling nut; per spec MIL-C-5015; MIL type AN3106B-24-28S less split shell and retaining nut; CBTL part/dwg A-2011151 | |
| S-3501 | For Replacement Use N17-S-69192-8601 | SWITCH, SENSITIVE: SPDT; 30v DC, 125 or 250v AC, 10 amp, phenolic body; 1-3/8 in. lg including term, 13/32 in. wd, 7/8 in. h excluding term screw, o/a dimen excluding actuator; snap-action plunger type actuating mechanism; beryllium copper spring w/silver contacts; 0.016 in. max differential movement, 3/64 in. max pre-travel, 1/32 in. min over-travel; 6 to 14 oz operating force; 1 contact normally open, 1 contact normally closed; three no. 4-40 round head machine screw type term w/lock washers; one 0.130 in. diam mtg hole and one 0.120 in. diam mtg hole, diagonally mtd on 0.96 in. centers; winterized unit; u/w JV-5 actuator; per spec MIL-S-6743; CMU type V3-1; p/o S-3513; same as S-301 | Loading Position Switch |
| S-3502 | | Same as S-3501, p/o S-3513 | Loading Position Switch |
| S-3503 | | Same as S-3501, p/o S-3513 | Loading Position Switch |
| S-3504 | | Same as S-3501, p/o S-3513 | Loading Position Switch |
| S-3505 | | Same as S-3501, p/o S-3513 | Loading Position Switch |
| S-3506 | | Same as S-3501, p/o S-3513 | Loading Position Switch |
| S-3507 | | Same as S-3501, p/o S-3514 | Transfer Position Switch |
| S-3508 | | Same as S-3501, p/o S-3514 | Transfer Position Switch |
| S-3509 | | Same as S-3501, p/o S-3514 | Transfer Position Switch |
| S-3510 | | Same as S-3501, p/o S-3514 | Transfer Position Switch |
| S-3511 | N17-S-99999-0591 | SWITCH, ROTOR SUB-ASSEMBLY: TP6T; functions as a shorting arm for stator contacts located on stator contact assembly; 2 section rotor, 6 fixed contacts each section, non-"pile-up", copper alloy, silver pl contacts; 3 poles each section, 6 throws; brass casting, silver pl; silicone bonded fiberglass body per MIL-P-997A; 5-1/4 in. lg, 5-5/16 in. wd, 5-3/16 in. h o/a; round shaft, 5-1/4 in. lg, 1/2 in. diam; stud term; CBTL part/dwg C-2011137; incl S-3511A and S-3511B | Loading Switch Rotor |
| S-3512 | N17-S-99999-0592 | SWITCH, ROTOR SUB-ASSEMBLY: DP4T; functions as a shorting arm for stator contacts located on stator contact assembly; 1 section rotor; 4 fixed contacts; non-"pile-up", copper alloy, silver pl contacts; 2 poles, 4 throws; brass casting, silver pl; silicone bonded fiberglass body per MIL-P-997A; 6 in. lg, 4-5/16 in. wd, 4-5/16 in. h o/a; round shaft, 6 in. lg, 1/2 in. diam; stud term; CBTL part/dwg B-2011136; incl E-3519 and E-3520 | Transfer Switch Rotor |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|--------------------|
| S-3513 | Assemble from Component Parts | SUB-ASSEMBLY: its function is to switch the antenna coupler into the RF circuit; 4-7/16 in. lg, 4-7/8 in. wd, 3-29/32 in. h o/a; sub-assembly mts by means of three 0.169 in. diam mtg holes equally spaced 120° apart on a 3.5 in. diam B. C.; CBTL part/dwg C-2011133; c/o B-3501, S-3501 thru S-3506, O-3519 thru O-3524, O-3529 and 2 actuating cams | Loading Switch |
| S-3514 | Assemble from Component Parts | SUB-ASSEMBLY: functions as a by-pass for the RF signal to either the RF tuner or directly into the RF section; 4-1/4 in. lg, 5-5/8 in. wd, 4-9/16 in. h o/a; sub-assembly mts by means of three 0.154 in. diam mtg holes equally spaced 120° apart on a 3.5 in. diam B. C.; CBTL part/dwg C-2011132; c/o B-3502, K-3501, S-3507 thru S-3510, O-3525 thru O-3528, O-3518 and two actuating cams | Transfer Switch |
| TB-3501 | N17-B-77840-1634 | TERMINAL BOARD: material of board molded phenolic, MIL-P-14B, type CFG; incl 8 term, double screw type, barrier type; o/a dimen 3-5/8 in. lg, 7/8 in. wd, 13/32 in. thk; four 0.160 in. diam mtg holes spaced 3-3/8 in. c to c lg by 5/16 in. c to c wd; CJC type 8-140-A | Terminal Strip |
| W-3501 | For Replacement Use N15-C-12200-775 | CABLE, RADIO FREQUENCY: 52 ohms nominal impedance, 29.5 mmf nominal capacitance per ft; 14,000v (RMS) max voltage rating; single solid inner conductor, copper, 0.250 in. diam; polyethylene dielectric; no outer jacket or wire braid; 29/32 in. diam, 8-5/8 in. lg o/a dimen; MIL type RG-19/U modified; CBTL part/dwg A-2011020-1 | To Antenna |
| W-3502 | For Replacement Use N15-C-12200-775 | CABLE, RADIO FREQUENCY: 52 ohms nominal impedance, 29.5 mmf nominal capacitance per ft; 14,000v (RMS) max voltage rating; single solid inner conductor, copper, 0.250 in. diam; polyethylene dielectric; no outer jacket or wire braid; 29/32 in. diam, 16-1/16 in. lg o/a dimen; MIL type RG-19/U modified; CBTL part/dwg A-2011020-2 | From Tuner Output |
| H-3601 | N17-C-781724-735 | Included in this table are replaceable parts for the main test cable assembly (CBTL dwg NL-901192-29). The 56 conductor cable harness (CBTL dwg NL-901194-14) is fabricated by the Navy and is not furnished with the equipment. This group of accessories is part of the Installation Kits. CLAMP, ELECTRICAL: aluminum alloy; tin pl; saddle clamp fastening device w/2 filister hd machine screws; o/a dimen 1-5/16 in. lg by 1-7/8 in. OD; no mtg facilities; designed to hold material 15/16 in. diam min; 1-7/16 in. -18 NEF-2B coupling thd; rubber bushing & fibre washer incl; per spec MIL-C-5015; MIL type AN-3057-16 | Cable Clamp |
| H-3602 | | Same as H-3601 | Cable Clamp |
| H-3603 | Procured on demand by nearest Naval Shore Supply Activity | CLAMP, ELECTRICAL: cast aluminum; designed to form a termination inside conduit boxes or panel; 1-5/8 in. hex by 11/16 in. lg o/a dimen; designed to hold material 1 in. in diam; 1-7/16 in. -18 coupling thd; MIL type AN-3056-16 | Cable Termination |
| H-3604 | | Same as H-3603 | Cable Termination |
| J-3601 | N17-I-59628-9328 | INSULATOR, FEEDTHRU: bushing and bowl w/tapped cap and thd stud; steatite, brass; silver pl; 2-3/4 in. lg, 1-1/8 in. diam o/a; 45 amp; 12,000v; CCCV type 1125-A modified; CBTL part/dwg NL-900217-1; same as J-1503 | To P-604 or P-1404 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|------------------|---|---|-----------------------------------|
| J-3602 | | Same as J-3601 | To P-1401 or P-1402 |
| J-3603 | N17-I-59705-1251 | INSULATOR, FEEDTHRU: brass; silver pl; 15/16 in. lg, 5/8 in. o/a diam; CNA type XS-7 modified; CBTL part/dwg NL-900095-1; same as J-503 | To P-605 or P-608 |
| J-3604 | | Same as J-3603 | To P-606 or P-1403 |
| J-3605 | N17-C-73108-1262 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female, round; straight type; 1-1/32 in. lg, 3/4 in. wd across mtg plate; 500v peak; RF connector, 52 ohms nominal impedance; cylindrical shape; polystyrene insert; four 3-56 tapped mtg holes in corners of mtg flange 0.50 in. mtg/c; JAN type UG-291/U; same as J-1303 | To P-603 |
| J-3606 | | Same as J-3605 | To P-601 or P-607 |
| J-3607 | N17-C-73114-7071 | CONNECTOR, RECEPTACLE, ELECTRICAL: 1 contact, female, round; straight type; 1-27/32 in. lg, 1 in. wd across mtg plate; RF connector, 52 ohms nominal impedance; cylindrical shape; four 1/8 in. mtg holes in corners of mtg flange 23/32 in. mtg/c; CARO type 36000; same as J-1304 | To P-602 |
| P-3601 | N17-C-99999-2015 | CONNECTOR, RECEPTACLE, ELECTRICAL: consists of double row of 8 sliding contacts per row, male, flat; 2-7/16 in. lg, 7/8 in. wd, 9/16 in. h excluding contacts and term; w/ partially enclosed plastic shell; polarized; non-locking; 5 amp, 600v DC; mtd by two 0.125 in. diam holes in diagonal corners, spaced 2.024 in. c to c in lg and 0.460 in. c to c in wd; CPH type 26-159-16; same as P-401 | For Mating Connectors in Cabinets |
| P-3602 | | Same as P-3601 | For Mating Connectors in Cabinets |
| P-3603 | | Same as P-3601 | For Mating Connectors in Cabinets |
| P-3604 | N17-C-99999-2016 | CONNECTOR, RECEPTACLE, ELECTRICAL: c/o double row of 8 sliding contacts per row, female; 2-7/16 in. lg, 7/8 in. wd, 9/16 in. h; polarized; nonlocking; 5 amp, 600v DC; mtd by two 0.125 in. diam holes in diagonal corners, spaced 2.024 in. c to c in lg, and 0.460 in. c to c in wd; CPH type 26-190-16-1; same as J-601 | For Mating Connectors in Units |
| P-3605 | | Same as P-3604 | For Mating Connectors in Units |
| P-3606 | | Same as P-3604 | For Mating Connectors in Units |
| P-3607 | N17-C-71408-5333 | CONNECTOR, PLUG, ELECTRICAL: 1 contact, male, round; straight type; BNC connector; 31/32 in. lg, 9/16 in. diam o/a; RF connector, 50 ohms nominal impedance; constant frequency impedance; cylindrical shape, brass, silver pl, locking type; teflon insert; 0.206 in. diam max cable opening; NAVY dwg RE49F246; MIL type UG-88/U; same as P-601 | To J-1303 or J-2928 |
| P-3608 | | Same as P-3607 | To J-1305 |
| P-3609 | N17-C-99999-1179 | CONNECTOR, PLUG, ELECTRICAL: one contact; one mating end; male, style 12 Ref Dwg Group 206, 52 ohms nominal im- | To J-3104 |

TABLE 8-3. TABLE OF REPLACEABLE PARTS

| Reference Desig. | Stock Numbers Signal Corps Standard Navy Air Force | Name and Description | Locating Function |
|---------------------|---|--|------------------------|
| P-3609 (cont) | | pedance; plastic dielectric; round 90° angle shape; 1-7/32 in. lg by 1-5/8 in. wd o/a dimen; w/inclosing brass shell, silver pl; polarized; locking type, 5/8 in. -24 thd coupling nut, w/ cable clamp; RF connector; CARO part 18750; same as P-602 | |
| P-3610 | N17-C-800646-201 | CAP, PLATE: ceramic body w/tin pl beryllium copper grip; fits 3/8 in. diam cap; CNA type SPP-3; same as P-605 | To J-1604 or J-1108 |
| P-3611 | | Same as P-3610 | To J-503 or J-1107 |
| P-3612 | N17-C-800956-126 | CAP, PLATE: ceramic body w/tin pl beryllium copper grip; fits 9/16 in. diam cap; CNA type SPP-9; same as P-604 | To J-1603 or J-1503 |
| P-3613 | | Same as P-3612 | To J-1605 or J-1306 |

TABLE 8-4. MAINTENANCE PARTS KIT

| KEY DESIGNATION | BOX NO. | QUANT PER BOX | KEY DESIGNATION | BOX NO. | QUANT PER BOX | KEY DESIGNATION | BOX NO. | QUANT PER BOX |
|-----------------|-------------|---------------|-----------------|-------------|---------------|-----------------|------------|---------------|
| B-301 | TN-229/SRT | 1 | F-1501 | OA-685/SRT | 10 | R-1319 | OA-684/SRT | 1 |
| B-303 | TN-229/SRT | 1 | F-2917 | OA-684/SRT | 5 | R-1326 | OA-684/SRT | 1 |
| B-305 | TN-229/SRT | 1 | F-3001 | OA-684/SRT | 5 | R-1327 | OA-684/SRT | 1 |
| B-701A | MT-1423/SRT | 1 | F-3003 | OA-684/SRT | 5 | R-1330 | OA-684/SRT | 1 |
| B-1306A | OA-684/SRT | 1 | HR-701 | MT-1423/SRT | 1 | R-1338 | OA-684/SRT | 1 |
| C-301 | TN-229/SRT | 1 | I-401 | OA-684/SRT | 2 | R-1601 | OA-685/SRT | 1 |
| C-401 | OA-684/SRT | 1 | I-1301 | OA-684/SRT | 3 | R-1603 | OA-685/SRT | 1 |
| C-402 | OA-684/SRT | 1 | J-501 | OA-684/SRT | 2 | R-2126 | OA-684/SRT | 1 |
| C-1042 | OA-684/SRT | 2 | J-504 | OA-684/SRT | 1 | R-2128 | OA-684/SRT | 1 |
| C-1301 | OA-684/SRT | 1 | J-601 | OA-684/SRT | 2 | R-2132 | OA-684/SRT | 1 |
| C-1303 | OA-684/SRT | 2 | J-1109 | OA-684/SRT | 2 | R-2140 | OA-684/SRT | 1 |
| C-1304 | OA-684/SRT | 1 | J-1111 | OA-684/SRT | 2 | R-2918 | OA-684/SRT | 1 |
| C-1305 | OA-684/SRT | 1 | J-1306 | OA-684/SRT | 1 | R-2955 | OA-684/SRT | 1 |
| C-1315 | OA-684/SRT | 1 | J-1401 | OA-685/SRT | 1 | S-305 | TN-229/SRT | 1 |
| C-1318 | OA-684/SRT | 1 | J-1501 | OA-685/SRT | 1 | S-403 | OA-684/SRT | 1 |
| C-1319 | OA-684/SRT | 2 | J-1503 | OA-685/SRT | 1 | S-404 | OA-684/SRT | 1 |
| C-1323 | OA-684/SRT | 1 | J-1604 | OA-685/SRT | 1 | S-501 | OA-684/SRT | 1 |
| C-1601 | OA-685/SRT | 2 | J-2931 | OA-684/SRT | 1 | S-1101A | OA-684/SRT | 3 |
| C-1602 | OA-685/SRT | 2 | J-3007 | OA-684/SRT | 1 | S-1106 | OA-684/SRT | 1 |
| C-2038 | OA-684/SRT | 1 | K-503 | OA-684/SRT | 1 | S-1107 | OA-684/SRT | 1 |
| C-2137 | OA-684/SRT | 1 | K-1101 | OA-684/SRT | 1 | S-1109 | OA-684/SRT | 1 |
| C-2170 | OA-684/SRT | 1 | K-1102 | OA-684/SRT | 1 | S-1301A | OA-684/SRT | 1 |
| C-2287 | OA-684/SRT | 1 | K-1501 | OA-685/SRT | 1 | S-1301C | OA-684/SRT | 1 |
| C-2345 | OA-684/SRT | 1 | K-1502 | OA-685/SRT | 1 | S-1302 | OA-684/SRT | 1 |
| C-2355 | OA-684/SRT | 1 | K-1504 | OA-685/SRT | 1 | S-1378 | OA-684/SRT | 1 |
| C-2644 | OA-684/SRT | 1 | K-1601 | OA-685/SRT | 1 | S-1381 | OA-684/SRT | 1 |
| C-2766 | OA-684/SRT | 1 | K-1603 | OA-685/SRT | 1 | S-1384 | OA-684/SRT | 1 |
| C-2806 | OA-684/SRT | 1 | K-3001 | OA-684/SRT | 1 | S-1386 | OA-684/SRT | 1 |
| C-3201 | OA-684/SRT | 1 | L-1501 | OA-685/SRT | 1 | S-1501 | OA-685/SRT | 1 |
| C-3501 | CU-372/SRT | 1 | M-1501 | OA-685/SRT | 1 | S-1502 | OA-685/SRT | 1 |
| CR-1001 | OA-684/SRT | 1 | O-2052 | OA-684/SRT | 2 | S-2051B | OA-684/SRT | 6 |
| CR-1601 | OA-685/SRT | 1 | O-2055 | OA-684/SRT | 1 | S-2126 | OA-684/SRT | 2 |
| CR-3001 | OA-684/SRT | 2 | O-2056 | OA-684/SRT | 1 | S-2651B | OA-684/SRT | 1 |
| CR-3201 | OA-684/SRT | 4 | O-2210 | OA-684/SRT | 1 | T-1001 | OA-684/SRT | 1 |
| E-312 | TN-229/SRT | 1 | O-2337 | OA-684/SRT | 1 | T-1002 | OA-684/SRT | 1 |
| E-314 | TN-229/SRT | 1 | O-2433 | OA-684/SRT | 1 | T-1501 | OA-685/SRT | 1 |
| E-315 | TN-229/SRT | 1 | O-2532 | OA-684/SRT | 1 | T-1502 | T-1502 | 1 |
| E-1507 | OA-685/SRT | 1 | O-2657 | OA-684/SRT | 1 | T-1601 | OA-685/SRT | 1 |
| E-1511 | OA-685/SRT | 3 | O-2658 | OA-684/SRT | 1 | T-1602 | OA-685/SRT | 1 |
| E-1514 | OA-685/SRT | 2 | O-2919 | OA-684/SRT | 1 | T-3001 | OA-684/SRT | 1 |
| E-1516 | OA-685/SRT | 2 | O-2920 | OA-684/SRT | 1 | XI-1601 | OA-685/SRT | 1 |
| E-1517 | OA-685/SRT | 2 | P-2053 | OA-684/SRT | 1 | XV-2101 | OA-684/SRT | 3 |
| E-1518 | OA-685/SRT | 2 | R-302 | TN-229/SRT | 1 | XV-2153 | OA-684/SRT | 5 |
| E-1519 | OA-685/SRT | 2 | R-402 | OA-684/SRT | 1 | Z-301 | TN-229/SRT | 1 |
| F-501 | OA-684/SRT | 5 | R-1045 | OA-684/SRT | 1 | Z-1301 | OA-684/SRT | 1 |
| F-503 | OA-684/SRT | 5 | R-1314 | OA-684/SRT | 1 | Z-2001 | OA-684/SRT | 1 |
| F-1301 | OA-684/SRT | 5 | R-1315 | OA-684/SRT | 1 | Z-2053 | OA-684/SRT | 1 |

TABLE 8-5. CROSS REFERENCE PARTS LIST

| JAN OR MIL DESIGNATION | KEY SYMBOL | JAN OR MIL DESIGNATION | KEY SYMBOL | JAN OR MIL DESIGNATION | KEY SYMBOL |
|------------------------|------------|------------------------|------------|------------------------|------------|
| AN-3056-16 | H-3603 | CM35C472K | C-2927 | RB51BR5000F | R-3114 |
| AN-3057-16 | H-3601 | CM35E103M | C-1302 | RB51B10001F | R-2126 |
| AN-3057-6 | H-3316 | CM35E472J | C-1026 | RB51B2R500F | R-1330 |
| AN-3102A-14S-5S | J-1106 | CM45A222M | C-1316 | RB51B25ROOF | R-1319 |
| AN-3102A-14S-7S | J-3203 | CM45B470K | C-1367 | RB51B5ROOOF | R-1326 |
| AN-3102E-24-28S | J-3503 | CM55E202J | C-1322 | RB51B50ROOF | R-1315 |
| AN-3102E-32-8S | J-3501 | CM55E333M | C-1315 | RC20BF100K | R-1046 |
| AN-3106B-14S-7P | P-3315 | CM60F472G | C-2060A | RC20BF101J | R-1304 |
| AN-3106B-24-28S | P-3501 | CM65B101J | C-1327 | RC20BF101K | R-1124 |
| AN-6227B-23 | O-347 | CM65B131J | C-1331 | RC20BF102J | R-2348 |
| AN-6227B-30 | O-346 | CM65B201J | C-1325 | RC20BF102K | R-1033 |
| AN-6227B-34 | O-345 | CM65B620J | C-1330 | RC20BF103J | R-1089 |
| AN-6227B-5 | O-352 | CN30E103M | C-1004 | RC20BF103K | R-2024 |
| AN-6227B-67 | O-351 | CN42E203K | C-1047 | RC20BF104J | R-1084 |
| AN-6227B-72 | O-350 | CN42E303K | C-1048 | RC20BF104K | R-1072 |
| AN-6227B-77 | O-348 | CN43E104M | C-1029 | RC20BF105J | R-2007 |
| AN-931-A14-20 | H-3007 | CN43E503M | C-1009 | RC20BF105K | R-1013 |
| AN-931-A8-13 | H-3006 | CP29A1EG103M | C-1017 | RC20BF121K | R-1001 |
| CC21CJ030C | C-2344 | CP40C2FF405V | C-1040 | RC20BF123K | R-2675 |
| CC21LH050C | C-2806 | CP41B1DF405V | C-3011 | RC20BF124J | R-1085 |
| CC21LH150G | C-2631 | CP53B1EC504V | C-1007 | RC20BF124K | R-1050 |
| CC21LJ030C | C-2038 | CP53B1EF205K | C-505 | RC20BF125K | R-1094 |
| CC21PH120J | C-2215 | CP53B1EF254V | C-1041 | RC20BF150K | R-2440 |
| CC21PH240G | C-2430 | CP53B1FB105V | C-1008 | RC20BF151K | R-2160 |
| CC21PK010C | C-2537 | CP53B1FF504V | C-1038 | RC20BF152K | R-1003 |
| CC21PK020C | C-2337 | CP53B4FF104V | C-1003 | RC20BF153J | R-2339 |
| CC21RH270G | C-2345 | CP53B4FF254V | C-1037 | RC20BF153K | R-1052 |
| CC21SH300G | C-2766 | CP54B1EB405K | C-1019 | RC20BF154J | R-1108 |
| CC21SK010C | C-2355 | CP54B1EF104V | C-2291 | RC20BF154K | R-1019 |
| CC21TH200G | C-2410 | CP55B1FF504V | C-1039 | RC20BF183J | R-1017 |
| CC21UJ030C | C-2231 | CP63B1DG504X | C-1045 | RC20BF184K | R-1004 |
| CC21UJ040C | C-2175 | CP63B1EF105K | C-1310 | RC20BF185K | R-1086 |
| CC21UJ300G | C-2222 | CP67B4EF504V | C-1030 | RC20BF221J | R-2044 |
| CC21UJ510G | C-2066 | CP69B5FF104V | C-2001 | RC20BF221K | R-1118 |
| CC25LH430G | C-2237 | CP69B5FF254V | C-2206 | RC20BF222K | R-1010 |
| CC26PH470G | C-2246 | CP70B1EG156X | C-501 | RC20BF223J | R-2218 |
| CC26TH680G | C-2170 | CP70E1EJ805X | C-503 | RC20BF223K | R-2013 |
| CC26UJ101G | C-1050 | CP70E1EN105V | C-1603 | RC20BF224J | R-1090 |
| CC26UJ820G | C-2137 | CV11B130 | C-2335 | RC20BF225K | R-1127 |
| CC26UJ910F | C-2060B | CV11C300 | C-2219 | RC20BF271J | R-2228 |
| CC32CG680G | C-2287 | CV11C450 | C-2212 | RC20BF271K | R-1005 |
| CE51B152F | C-1034 | CV14C300 | C-1304 | RC20BF272K | R-2640 |
| CE51E101H | C-1601 | CW-123A/U | O-2928 | RC20BF273K | R-1126 |
| CE51E800R | C-1036 | FO9D10ROB | F-3001 | RC20BF274J | R-2205 |
| CE51E801G | C-3001 | FO9G1ROOB | F-503 | RC20BF274K | R-1095 |
| CE52C350Q | C-1042 | FO9G15ROA | F-3005 | RC20BF330K | R-2454 |
| CE52E350R | C-3004 | FO9G2ROOB | F-1002 | RC20BF331K | R-2138 |
| CE61E40R | C-1602 | FO9G3ROOB | F-1001 | RC20BF332J | R-2004 |
| CE63C101E | C-1002 | FO9G5ROOB | F-3003 | RC20BF332K | R-2171 |
| CE63C250F | C-1001 | FO9G6ROOB | F-501 | RC20BF333J | R-2226 |
| CM20A181K | C-1032 | JJ-033 | J-1105 | RC20BF333K | R-1140 |
| CM20A330J | C-1020 | JJ-089 | J-1104 | RC20BF334K | R-2052 |
| CM20A471J | C-1022 | MR26W100DCUAR | M-402 | RC20BF394K | R-1011 |
| CM20A510J | C-1031 | MR35W005RLAA | M-1302 | RC20BF470K | R-1031 |
| CM25D101G | C-1370 | MR35W106SPEC | M-1301 | RC20BF472J | R-2221 |
| CM25D301G | C-1369 | RA20A1SD103AK | R-2919 | RC20BF472K | R-2010 |
| CM25E102M | C-1309 | RA20A1SD201AK | R-2916 | RC20BF473J | R-2364 |
| CM25E471M | C-1301 | RA20A1SD252AK | R-1068 | RC20BF473K | R-1018 |
| CM30A102J | C-1024 | RA20B1RD103AK | R-2955 | RC20BF474J | R-2002 |
| CM30A202J | C-1010 | RB10B30001F | R-2207 | RC20BF474K | R-1035 |
| CM30A302J | C-1025 | RB40B65000F | R-2918 | RC20BF510J | R-2151 |
| CM30A332K | C-2174 | RB42B50000F | R-2132 | RC20BF511J | R-3201 |
| CM35C103J | C-2002 | RB51BR2500F | R-1327 | RC20BF514J | R-1109 |

TABLE 8-5. CROSS REFERENCE PARTS LIST

| JAN OR MIL DESIGNATION | KEY SYMBOL | JAN OR MIL DESIGNATION | KEY SYMBOL | JAN OR MIL DESIGNATION | KEY SYMBOL |
|------------------------|------------|------------------------|------------|------------------------|------------|
| RC20BF561J | R-2242 | RC42BF103J | R-1342 | RW56J182 | R-1603 |
| RC20BF561K | R-1373 | RC42BF103K | R-1055 | RW56J501 | R-1601 |
| RC20BF562J | R-2059 | RC42BF123K | R-1042 | ST12D | S-1103 |
| RC20BF562K | R-1026 | RC42BF153K | R-1008 | ST22K | S-3007 |
| RC20BF563K | R-1083 | RC42BF183K | R-1007 | ST22N | S-1102 |
| RC20BF623J | R-1301 | RC42BF221K | R-1501 | ST42A | S-3005 |
| RC20BF680K | R-2647 | RC42BF222J | R-1313 | ST42E | S-2917 |
| RC20BF681J | R-2214 | RC42BF223J | R-1341 | ST50K | S-3002 |
| RC20BF681K | R-2057 | RC42BF223K | R-1016 | ST52P | S-402 |
| RC20BF682K | R-2056 | RC42BF274J | R-1012 | ST55K | S-3001 |
| RC20BF683K | R-1030 | RC42BF333K | R-1043 | TS101PO1 | XC-1601 |
| RC20BF821J | R-2229 | RC42BF472K | R-3010 | TS102CO1 | XV-1001 |
| RC20BF822J | R-2227 | RC42BF473K | R-1006 | TS102PO1 | XV-1303 |
| RC20BF822K | R-1028 | RC42BF511J | R-1054 | TS102UO1 | O-1001 |
| RC20BF824K | R-514 | RC42BF560K | R-1620 | TS102UO2 | O-1012 |
| RC20GF102J | R-412 | RC42BF562K | R-1063 | TS102UO3 | O-1021 |
| RC20GF103K | R-2203 | RC42BF623J | R-1051 | TS103CO1 | XV-1002 |
| RC20GF104K | R-2530 | RC42BF681J | R-1370 | TS103PO1 | XV-2002 |
| RC20GF122K | R-409 | RC42BF682K | R-519 | TS103UO2 | O-1002 |
| RC20GF153K | R-2428 | RC42BF751J | R-1389 | UG-154/U | P-3307 |
| RC20GF154K | R-408 | RC42BF823J | R-1395 | UG-167A/U | P-3308 |
| RC20GF222J | R-414 | RC42GF100J | R-3202 | UG-21B/U | P-301 |
| RC20GF222K | R-2430 | RC42GF102K | R-2452 | UG-23B/U | P-3313 |
| RC20GF223K | R-2427 | RC42GF122K | R-2016 | UG-260/U | P-2628 |
| RC20GF224K | R-2239 | RC42GF153K | R-2305 | UG-262/U | J-2928 |
| RC20GF471J | R-3206 | RC42GF183J | R-2363 | UG-271/U | P-302 |
| RC20GF472K | R-2801 | RC42GF183K | R-2356 | UG-287/U | J-304 |
| RC20GF510J | R-2233 | RC42GF222K | R-2135 | UG-290A/U | J-2931 |
| RC20GF561K | R-2156 | RC42GF223J | R-2222 | UG-291/U | J-1303 |
| RC20GF563K | R-2426 | RC42GF223K | R-2204 | UG-535/U | J-1308 |
| RC20GF622J | R-410 | RC42GF273K | R-2241 | UG-536/U | P-610 |
| RC20GF822K | R-416 | RC42GF333K | R-2213 | UG-58A/U | J-3201 |
| RC30BF100K | R-1312 | RC42GF393K | R-2358 | UG-88/U | P-601 |
| RC30BF103K | R-1115 | RC42GF472K | R-2672 | UG-89/U | P-609 |
| RC30BF104K | R-1024 | RC42GF473K | R-407 | OA2 | V-1303 |
| RC30BF124K | R-1036 | RC42GF562K | R-2823 | OB2 | V-1021 |
| RC30BF153J | R-1308 | RC42GF621J | R-1136 | 1N34A | CR-1002 |
| RC30BF154J | R-1305 | RC42GF683J | R-2225 | 1N38 | CR-2201 |
| RC30BF154K | R-1631 | RC42GF753K | R-406 | 12AU7 | V-2202 |
| RC30BF224K | R-518 | RC42GF822J | R-2054 | 3B28 | V-501 |
| RC30BF273K | R-1105 | RG-19/U | W-301 | 4D21 | V-1601 |
| RC30BF332J | R-1311 | RP101SD252KK | R-2953 | 5R4WGB | V-1009 |
| RC30BF392K | R-1135 | RV4ATRE103A | R-301 | 5651 | V-1012 |
| RC30BF394K | R-515 | RW12F503 | R-1629 | 5654 | V-2001 |
| RC30BF472J | R-1306 | RW13F103 | R-501 | 5687 | V-2629 |
| RC30BF473J | R-1102 | RW13F143 | R-502 | 5725 | V-1001 |
| RC30BF514J | R-1621 | RW14F103 | R-3008 | 5726 | V-1013 |
| RC30BF563J | R-1088 | RW14F900 | R-3007 | 5751 | V-1002 |
| RC30BF563K | R-1114 | RW20G161 | R-1045 | 5814 | V-1004 |
| RC30GF103J | R-2333 | RW20G162 | R-1375 | 5933 | V-1006 |
| RC30GF104K | R-2033 | RW20G252 | R-1376 | 6AG5 | V-2126 |
| RC30GF123K | R-2445 | RW20G282 | R-1120 | 6AG7 | V-1301 |
| RC30GF124K | R-2303 | RW20G632 | R-1067 | 6AK6 | V-2051 |
| RC30GF153K | R-2635 | RW20G802 | R-1087 | 6AS7G | V-1010 |
| RC30GF273K | R-2169 | RW21G103 | R-1377 | 6E5 | V-2917 |
| RC30GF333K | R-2442 | RW21G123 | R-1069 | 6201 | V-1015 |
| RC30GF393K | R-2105 | RW21G252 | R-1505 | | |
| RC30GF472K | R-2429 | RW21G351 | R-3024 | | |
| RC30GF473K | R-2307 | RW21G500 | R-1302 | | |
| RC30GF512J | R-2215 | RW29G161 | R-3025 | NAVY TYPE | KEY SYMBOL |
| RC30GF822J | R-2212 | RW31F142 | R-2952 | | |
| RC42BF101K | R-1394 | RW31G202 | R-2649 | CB11EA101G | C-2103 |
| RC42BF102K | R-523 | RW55G352 | R-1344 | CB11EA102G | C-2003 |

TABLE 8-5. CROSS REFERENCE PARTS LIST

| NAVY TYPE | KEY SYMBOL | NAVY TYPE | KEY SYMBOL | NAVY TYPE | KEY SYMBOL |
|------------|------------|------------|------------|------------|------------|
| CB11EA152G | C-2062 | CB20EA151G | C-2058B | CB20EA470G | C-2251 |
| CB11EA181G | C-2159 | CB20EA152G | C-2013 | CB20EA471G | C-2053B |
| CB11EA241G | C-2155 | CB20EA161G | C-2058A | CB20AE510G | C-2347 |
| CB11EA271G | C-2039 | CB20EA180K | C-2802 | CB20EA511G | C-2005 |
| CB11EA330J | C-2383 | CB20EA200J | C-2658 | CB20EA561G | C-2054A |
| CB11EA361G | C-2033 | CB20EA220J | C-2255 | CB20EA620G | C-2653 |
| CB11EA561G | C-2220 | CB20EA240J | C-2427 | CB20EA621G | C-2052B |
| CB11EA680G | C-2165 | CB20EA241G | C-2057A | CB20EA680G | C-2654 |
| CB11EA750G | C-2341 | CB20EA270J | C-2805 | CB20EA681G | C-2169 |
| CB11EA751G | C-2204 | CB20EA271G | C-2393 | CB20EA750G | C-2059A |
| CB11EA910G | C-2012 | CB20EA300J | C-2659 | CB20EA751G | C-2051B |
| CB20EA050M | C-2258 | CB20EA301G | C-2498 | CB20EA820G | C-2655 |
| CB20EA100K | C-2257 | CB20EA330J | C-2253 | CB20EA821G | C-2052A |
| CB20EA101G | C-2331 | CB20EA331G | C-2055B | CB20EA910G | C-2656 |
| CB20EA102G | C-2037 | CB20EA360J | C-2428 | CB20EA911G | C-2051A |
| CB20EA120K | C-2426 | CB20EA390J | C-2252 | 28003 | O-505 |
| CB20EA150K | C-2256 | | | | |

TABLE 8-6. COLOR CODES AND MISCELLANEOUS DATA

CAPACITOR COLOR CODES

JAN 6-DOT COLOR CODE FOR PAPER-DIELECTRIC CAPACITORS

1st SIGNIFICANT FIGURE
2nd SIGNIFICANT FIGURE
LEADS TO BE LOCATED ON ϕ WITHIN $\pm \frac{1}{32}$ "
INDICATOR
1/8 MIN.
20 (.032 DIA.) A.W.G. MAX.
57/64 MAX.
NUMBER OF ZEROS
TOLERANCE
CHARACTERISTIC
SILVER DOT

| CAPACITANCE | | | | |
|-------------|----------------|---------------------|-------------------------------------|-----------------------|
| COLOR | CHARACTERISTIC | SIGNIFICANT FIGURES | ZEROS FOLLOWING SIGNIFICANT FIGURES | CAPACITANCE TOLERANCE |
| BLACK | A | 0 | 0 | ± 20 (M) |
| BROWN | E | 1 | 1 | |
| RED | H | 2 | 2 | |
| ORANGE | J | 3 | 3 | ± 30 (N) |
| YELLOW | P | 4 | 4 | |
| GREEN | R | 5 | | |
| BLUE | S | 6 | | |
| VIOLET | T | 7 | | |
| GRAY | | 8 | | |
| WHITE | | 9 | | |
| SILVER | | | | ± 10 (K) |

JAN 6-DOT COLOR CODE FOR MICA-DIELECTRIC CAPACITORS

FIRST SIGNIFICANT FIGURE
SECOND SIGNIFICANT FIGURE
MULTIPLIER
TOLERANCE
TEMPERATURE COEFFICIENT

THIS DOT IS ALWAYS BLACK

JAN COLOR CODE FOR FIXED CERAMIC-DIELECTRIC CAPACITORS

RADIAL TYPE NON-INSULATED
AXIAL TYPE INSULATED

| MULTIPLIER | | | | | |
|------------|---------------------------------|-------------------------------|------------------------|----------------|-------------------------|
| COLOR | RMA MICA AND CERAMIC-DIELECTRIC | JAN MICA AND PAPER-DIELECTRIC | JAN CERAMIC DIELECTRIC | VOLTAGE RATING | TEMPERATURE COEFFICIENT |
| BLACK | | | | | A |
| BROWN | 10 | 10 | 10 | 100 | B |
| RED | 100 | 100 | 100 | 200 | C |
| ORANGE | 1,000 | 1,000 | 1,000 | 300 | D |
| YELLOW | 10,000 | | | 400 | E |
| GREEN | 100,000 | | | 500 | F |
| BLUE | 1,000,000 | | | 600 | G |
| PURPLE | 10,000,000 | | | 700 | |
| GRAY | 100,000,000 | | 0.01 | 800 | |
| WHITE | 1,000,000,000 | | 0.1 | 900 | |
| GOLD | 0.1 | 0.1 | | 1,000 | |
| SILVER | 0.01 | 0.01 | | 2,000 | |
| | | | | 500 | |

MIL COLOR CODE FOR FIXED MICA-DIELECTRIC BUTTON STYLE CAPACITORS

COLOR CODING * TO BE APPLIED AS INDICATED BELOW

MIL BUTTON-MICA IDENTIFIER (BLACK)
FIRST SIGNIFICANT FIGURE
SECOND SIGNIFICANT FIGURE
MULTIPLIER
CAPACITANCE TOLERANCE
CHARACTERISTIC

| CAPACITANCE ($\mu\mu\text{f}$) | D.C. WORKING VOLTAGE | CHARACTERISTICS AVAILABLE AT CAPACITANCE TOLERANCE * | | | | | CAPACITANCE COLOR CODE | | |
|----------------------------------|----------------------|--|---------------------|----------------------|----------------------|--------------|------------------------|------------|-------|
| | | ± 2 PERCENT (G) | ± 5 PERCENT (J) | ± 10 PERCENT (K) | ± 20 PERCENT (M) | FIRST FIGURE | SECOND FIGURE | MULTIPLIER | |
| 10 | 300 | 170 | — | — | — | BW | BROWN | BLACK | BLACK |
| 15 | " | 250 | — | — | DX | BW | BROWN | GREEN | BLACK |
| 22 | " | 380 | — | — | DX | BW | RED | RED | BLACK |
| 33 | " | 550 | — | DX | DX | BW | ORANGE | ORANGE | BLACK |
| 47 | " | 800 | — | DX | OX | BW | YELLOW | PURPLE | BLACK |
| 68 | " | 1,150 | DX | DX | DX | BW | BLUE | GRAY | BLACK |
| 100 | " | 1,360 | DX | DX | DX | BW | BROWN | BLACK | BROWN |
| 150 | " | 1,360 | DX | DX | DX | BW | BROWN | GREEN | BROWN |
| 220 | " | 1,360 | DX | DX | DX | BW | RED | RED | BROWN |
| 330 | " | 1,360 | DX | DX | DX | BW | ORANGE | ORANGE | BROWN |
| 470 | " | 1,360 | DX | DX | DX | BW | YELLOW | PURPLE | BROWN |
| 680 | " | 1,000 | DX | DX | DX | BW | BLUE | GRAY | BROWN |
| 1,000 | " | 700 | DX | DX | DX | BW | BROWN | BLACK | RED |

* CAPACITANCE-TOLERANCE COLOR CODE: G-RED; J-GOLD; K-SILVER; M-BLACK. CHARACTERISTIC COLOR CODE: B-BROWN; O-ORANGE; W-PURPLE; X-GRAY. COLORS SHALL BE IN ACCORDANCE WITH STANDARD MIL-STD-104.

MIL COLOR CODE FOR FIXED CERAMIC-DIELECTRIC (GENERAL PURPOSE) CAPACITORS

| COLOR | CHARACTERISTIC (SEE I.2.1.2.) | NOMINAL CAPACITANCE SIGNIFICANT FIGURE | MULTIPLIER | CAPACITANCE TOLERANCE PERCENT |
|----------|-------------------------------|--|------------|-------------------------------|
| BLACK | -- | 0 | 1 | |
| BROWN | W | 1 | 10 | |
| RED | X | 2 | 100 | |
| ORANGE | -- | 3 | 1,000 | |
| YELLOW | -- | 4 | ---- | +100 -20 |
| GREEN | -- | 5 | | |
| BLUE | -- | 6 | | |
| PR (VIO) | -- | 7 | | |
| GRAY | -- | 8 | | |
| WHITE | -- | 9 | | |

ERIE RESISTOR CO. STAND-OFF CERAMICONS

TEMPERATURE COEFFICIENT
FIRST SIGNIFICANT FIGURE
SECOND SIGNIFICANT FIGURE
MULTIPLIER
TOLERANCE

"GP" CERAMICONS

TEMPERATURE COEFFICIENT
FIRST SIGNIFICANT FIGURE
SECOND SIGNIFICANT FIGURE
MULTIPLIER
TOLERANCE

| TEMPERATURE CHARACTERISTIC | COLOR | 1ST AND 2ND SIGNIFICANT FIGURE OF CAPACITANCE | DECIMAL MULTIPLIER OF CAPACITANCE | TOLERANCE OF CAPACITANCE |
|----------------------------|--------|---|-----------------------------------|--------------------------------|
| | BLACK | 0 | 1 | $\pm 20\%$ (CHAR. Y5Y ONLY) |
| | BROWN | 1 | 10 | |
| | RED | 2 | 100 | |
| | ORANGE | 3 | 1,000 | |
| | YELLOW | 4 | 10,000 | |
| | GREEN | 5 | | |
| | BLUE | 6 | | +100% -0% (CHAR. Z5Z ONLY) |
| | VIOLET | 7 | | |
| | GRAY | 8 | 0.01 | |
| | WHITE | 9 | 0.1 | |
| | GOLD | | | |
| | SILVER | | | |

Y5Y
CAPACITANCE SHALL NOT CHANGE MORE THAN 50% FROM 25°C VALUE AS TEMPERATURE IS VARIED FROM +10°C TO +75°C

Z5Z
CAPACITANCE SHALL NOT DECREASE MORE THAN 50% NOR INCREASE MORE THAN 25% FROM 25°C VALUE AS TEMPERATURE IS VARIED FROM -55°C TO +85°C

NOTE:
USE LOWEST POSSIBLE NUMERICAL MULTIPLIER

RESISTOR COLOR CODES

FIXED COMPOSITION RESISTORS
RMA COLOR CODE
JAN COLOR CODE

AXIAL TYPE
SIGNIFICANT FIGURES FIRST SECOND
MULTIPLIER
TOLERANCE
INSULATED TAN
NON-INSULATED BLACK

AXIAL TYPE INSULATED
SIGNIFICANT FIGURES FIRST SECOND
MULTIPLIER
TOLERANCE

RESISTORS

| TOLERANCE | MULTIPLIER | SIGNIFICANT FIGURE | COLOR |
|-----------|---------------|--------------------|--------|
| | 1 | 0 | BLACK |
| | 10 | 1 | BROWN |
| | 100 | 2 | RED |
| | 1,000 | 3 | ORANGE |
| | 10,000 | 4 | YELLOW |
| | 100,000 | 5 | GREEN |
| | 1,000,000 | 6 | BLUE |
| | 10,000,000 | 7 | VIOLET |
| | 100,000,000 | 8 | GRAY |
| | 1,000,000,000 | 9 | WHITE |
| 5 | 0.1 | | GOLD |
| 10 | 0.01 | | SILVER |

TABLE 8-7. LIST OF MANUFACTURERS

| PREFIX | NAME | ADDRESS |
|--------|---|---|
| CADI | James Knight Co. | Sandwich, Ill. |
| CAE | Cutler Hammer, Inc. | 1333 W. St. Paul Ave. Milwaukee, Wis. |
| CAGK | Amperite Company | 561 Broadway New York 12, N. Y. |
| CAI | Aladdin Radio Industries, Inc. | Nashville, Tenn. |
| CAIS | Birtcher Corp., The | 4371 Valley Blvd. Los Angeles 32, Calif. |
| CAMQ | Cambridge Thermionic Corp. | 445 Concord Ave. Cambridge, Mass. |
| CAN | Sangamo Electric Co. | Marion, Ill. |
| CANS | Kings Electronics Co., Inc. | 40 Marbledale Rd. Tuckahoe, N. Y. |
| CAO | Ward Leonard Co. | 23 South St. Mount Vernon, N. Y. |
| CAQM | Thomas B. Gibbs & Co. Division of G. W. Borg Corp. | Delevan, Wis. |
| CAQN | Friedman Co. | 220 E. 23rd St. New York, N. Y. |
| CARE | Potter & Brumfield Mfg. Co., Inc. | Princeton, Indiana |
| CARO | Industrial Products Co. | Brookfield St. Danbury, Conn. |
| CATK | Acro Mfg. Co. | 2040 E. Main St. Columbus, Ohio |
| CAUY | Helipot Corp. | 916 Meridian Ave. S. Pasadena 14, Calif. |
| CAVM | Electronic Transformer Co. | 207 W. 25th St. New York 1, N. Y. |
| CAW | Aerovox Corp. | 742 Belleville Ave. New Bedford, Mass. |
| CAXO | Shakeproof, Inc. | 2573 N. Keeler Ave. Chicago, Ill. |
| CAYT | Allen Mfg. Co. | 100 Sheldon St. Hartford, Conn. |
| CAYU | Barry Corp., The | 700 Pleasant St. Watertown 72, Mass. |
| CAYZ | Dialight Corp. | 60 Stewart Ave. Brooklyn 37, N. Y. |
| CAZG | Jennings Radio Mfg. Co. | 970 McLaughlin Ave. San Jose 12, Calif. |
| CBAM | SKF Industries | Front St. & Erie Ave. Philadelphia, Pa. |
| CBDW | Grayhill Co. | 537 Hillgrove Ave. LaGrange, Illinois |

TABLE 8-7. LIST OF MANUFACTURERS

| PREFIX | NAME | ADDRESS |
|--------|--|--|
| CBEN | Air-Maze Corp. | 25000 Miles Rd. Cleveland 28, Ohio |
| CBET | Scintilla Magneto Div. of Bendix Aviation Corp. | Sidney, New York |
| CBEY | K. V. Transformer Co. | 20 E. Franklin St. Danbury, Conn. |
| CBH | Boston Gear Works | 3200 Main St. Quincy 7, Mass. |
| CBKH | Sierra Engineering Co. | 123 East Montecito Ave. Sierra Madre, Calif. |
| CBN | Central Radio Laboratory Division of Globe Union Inc. | 900 E. Keefe Avenue Milwaukee, Wis. |
| CBTL | Federal Telecommunication Lab. Division of International Telephone & Telegraph Corp. | 500 Washington Ave. Nutley 10, N. J. |
| CBU | Isolantite Mfg. Corp. | Sterling, N. J. |
| CBWO | Astron Corp. | 255 Grant Ave. East Newark, N. J. |
| CBY | Aircraft Radio Corp. | Boonton, N. J. |
| CBZ | Allen-Bradley Co. | 136 W. Greenfield Ave. Milwaukee 4, Wis. |
| CBZX | Dale Products Inc. | Columbus, Nebraska |
| CCAE | Fafnir Bearing Co., The | New Britain, Conn. |
| CCBN | Rotron Mfg. Co., Inc. | 7-9 Schoonmaker Pl. Woodstock, N. Y. |
| CCC | Continental Carbon Co. | 13900 Lorain Ave. Cleveland 11, Ohio |
| CCCK | Winchester Electronics Inc. | Glenbrook, Conn. |
| CCCO | Bead Chain Mfg. Co., The | Mountain Grove & State Sts. Bridgeport, Conn. |
| CCCP | Boots Aircraft Nut Corp. | Newtown Turnpike Norwalk, Conn. |
| CCCQ | Dolinko & Wilkins, Inc. | 1901-7 Summit Ave. Union City, N. J. |
| CCCR | Filtron Co., Inc., The | 131-05 Fowler Ave. Flushing, Long Island, N. Y. |
| CCCS | Grant Pulley & Hardware Co. | 31-85 Whitestone Pkwy. Flushing, L. I., N. Y. |
| CCCT | Grigsby-Allison Co., Inc. | 407 No. Salen Ave. Arlington Heights, Ill. |
| CCCU | Groov-Pin Corp. | 1125 Hendricks Causeway Ridgefield, N. J. |
| CCCV | Heldor Bushing & Terminal Co., Inc. | 225 Belleville Ave. Bloomfield, N. J. |

TABLE 8-7. LIST OF MANUFACTURERS

| PREFIX | NAME | ADDRESS |
|--------|--|---|
| CCCW | Laurel Co. | Garfield, N. J. |
| CCCX | Lavelle Rubber Co. | 424 N. Wood Street Chicago, Illinois |
| CCCY | Leland, G. H. , Inc. | 123 Webster St. Dayton, Ohio |
| CCCZ | Matchless Electric Co. | 564 West Randolph St. Chicago, Illinois |
| CCDA | Norgren, C. A. , Co. | Englewood, Colorado |
| CCDB | Rohm & Haas Co. | Washington Square Philadelphia 5, Pa. |
| CCDC | Schrader's Son, A. Div. of Scovill Mfg. Co. , Inc. | 470 Vanderbilt Ave. Brooklyn, N. Y. |
| CCDD | Viking Tool & Machine Corp. , The | 14 Main St. Belleville, N. J. |
| CCDE | Waldes-Kohinoor, Inc. | 47-16 Austil Pl. Long Island City, N. Y. |
| CCH | Crouse-Hinds Co. | 1347 Wolf St. Syracuse 1, N. Y. |
| CCQ | Allied Control Co. , Inc. | 2 East End Ave. New York 21, N. Y. |
| CCX | R. W. Cramer Co. , Inc. , The | Miller St. Centerbrook, Conn. |
| CDA | Diehl Manufacturing Co. Electrical Div. of Singer Mfg. Co. | Finderne Plant Somerville, N. J. |
| CDP | General Ceramics Co. | Crows Mill Road Keasbey, N. J. |
| CED | Cannon Electric Co. | 3291 Humboldt St. Los Angeles 31, Calif. |
| CEE | Thomas A. Edison, Inc. | West Orange, N. J. |
| CEJ | Johnson, E. F. , Co. | Waseca, Minn. |
| CER | Erie Resistor Corp. | 644 W. 12th St. Erie, Pa. |
| CFA | Bussmann Mfg. Co. Division of McGraw Electric Co. | 2538 W. University St. St. Louis 7, Mo. |
| CFT | Federal Telephone & Radio Co. Division of International Telephone & Telegraph Corp. | 100 Kingsland Rd. Clifton, N. J. |
| CG | General Electric Lamp Div. | Nela Park Cleveland, Ohio |
| CGM | New Departure Division of General Motors Corp. | Bristol, Conn. |
| CHC | Hammarlund Mfg. Co. | 460 W. 34th St. New York, N. Y. |

TABLE 8-7. LIST OF MANUFACTURERS

| PREFIX | NAME | ADDRESS |
|--------|---|--|
| CHH | Arrow-Hart & Hegeman Electric Co. | 102 Hawthorne St. Hartford 6, Conn. |
| CHP | Haydon Mfg. Co., Inc. | Torrington, Conn. |
| CIM | Eitel-McCullough, Inc. | San Bruno, Calif. |
| CJA | Millen Co., James | 150 Exchange St. Malden, Mass. |
| CJC | Jones, Howard B., Co. Division of Cinch Mfg. Corp. | 2640 W. George St. Chicago 24, Ill. |
| CLR | Leach Relay Co. | 5915 Avalon Blvd. Los Angeles, Calif. |
| CMA | P. R. Mallory Co., Inc. | 3029 E. Washington St. Indianapolis 6, Ind. |
| CMG | Cinch Mfg. Corp. | 1026 S. Horman Ave. Chicago 24, Ill. |
| CMI | Molded Insulation Co., Inc. | 335 East Price Street Philadelphia, Pa. |
| CMM | Miller Coil Co. | 5917 So. Main St. Los Angeles, Calif. |
| CMU | Micro-Switch Division of Minneapolis-Honeywell Regulator Co. | Freeport, Ill. |
| CNA | National Co., Inc. | 61 Sherman St. Malden 48, Mass. |
| COC | Oak Mfg. Co. | 1260 Clybourn Ave. Chicago 10, Ill. |
| COM | Ohmite Manufacturing Co. | 3604 W. Howard St. Chicago, Ill. |
| CPB | Price Electric Corp. | 5560 Church St. Frederick, Md. |
| CPD | Communication Products Co. | Marlboro, N. J. |
| CPH | American Phenolic Corp. | 1830 S. 54th Ave. Chicago 50, Ill. |
| CRP | Raytheon Mfg. & Prod. Co. | 190 Willow St. Waltham, Mass. |
| CRY | C. P. Clare & Co. | 4719 Sunnyside Ave. Chicago 30, Ill. |
| CSD | Struthers-Dunn, Inc. | 144 N. 13 St. Philadelphia 7, Pa. |
| CSF | Sprague Electric Co. | 307 Marshall St. N. Adams, Mass. |
| CSI | Sigma Instruments, Inc. | 170 Pearl St. South Braintree Boston 85, Mass. |
| CSM | Shallcross Mfg. Co. | 24 Pusey Ave. Collingdale, Pa. |

TABLE 8-7. LIST OF MANUFACTURERS

| PREFIX | NAME | ADDRESS |
|--------|------------------------------------|---|
| CSQ | Spencer Thermostat Co. | 34 Forrest St. Attleboro, Mass. |
| CUF | United-Carr Fastener Co. | 450 Main St. Cambridge 42, Mass. |
| CUT | United Transformer Corp. | 148 Varick St. New York 13, N. Y. |
| CV | Weston Electrical Instrument Corp. | 619 Frelinghuysen Ave. Newark, N. J. |
| CZB | Breeze Corp. | 18-36 S. 6th St. Newark 7, N. J. |

★
NAVSHIPS 92121(A)

INSTRUCTION BOOK

for

RADIO TRANSMITTING SETS

AN/SRT-14, AN/SRT-14A, AN/SRT-15,
AN/SRT-15A, AN/SRT-16 AND AN/SRT-16A

INDEX

FEDERAL TELEPHONE AND RADIO COMPANY

A division of INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

CLIFTON, NEW JERSEY

DEPARTMENT OF THE NAVY

BUREAU OF SHIPS

★
*Contract: NObsr-52021
NObsr-52622*

Approved by BuShips: 26 October 1955

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| 3 | Installation |
| 4 | Operation |
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